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AUTHOR Sharon, Amiel T.
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ABSTRACT

A model for assessing specific competences acquired in work situations, and for relating these skills to occupationally oriented degree programs, is presented. The Work Assessment Model is designed to help a college specify the competences acquired, define the learning objectives of occupational and career programs, and translate the competences into appropriate college credits. This model is applied to three fields: data processing, law enforcement, and secretarial science. Prototype assessment instruments--including detailed check lists, performance tests, rating forms, and interview questions--are appended. (Author/MV)

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ASSESSING OCCUPATIONAL COMPETENCES – A CAEL HANDBOOK

AMIEL SHARON

COOPERATIVE ASSESSMENT OF EXPERIENTIAL LEARNING

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CAEL is an educational association of 250 institutions of higher education and other educational organizations. It was chartered by the Regents of the State of New York in September, 1976 for the purpose of fostering experiential learning and the valid and reliable assessment of its outcomes.

CAEL (Cooperative Assessment of Experiential Learning) started in March, 1974 as a research and development project involving Educational Testing Service and a group of colleges and universities. Funding was provided initially by the Carnegie Corporation of New York and subsequently by the Ford Foundation, the Lilly Endowment, and the Fund for the Improvement of Postsecondary Education.

Through June 30, 1977 inquiries concerning activities, publications, or membership should be addressed to CAEL, Educational Testing Service, Princeton, NJ 08540.

Following June 30, 1977 all correspondence should be addressed to CAEL, American City Building, Suite 403, Columbia, MD 21044.

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ASSESSING OCCUPATIONAL COMPETENCES— A CAEL HANDBOOK

Amiel T. Sharon
Educational Testing Service

Cooperative Assessment of Experiential Learning

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FOREWORD

This *Handbook* is one of several major CAEL assessment reports based upon CAEL Working Papers produced in 1975. CAEL followed an unusual developmental plan in validating its initial work and preparing these reports. In order to insure that its developmental work was fully reviewed and tried out prior to final publication, the CAEL Working Papers were used experimentally in approximately 80 CAEL institutions during 1975–76. In a formal review procedure users provided critique and suggestions that the author used in preparing this revision. Validation of these current materials also included a series of field studies that addressed important issues concerning reliability, validity, and the value of assessment to the student. Those validation studies are reported in *The CAEL Validation Report*, 1976; aspects of the findings especially pertinent to content are summarized briefly in Chapter VIII of this *Handbook*. The author's Preface summarizes the more important issues with which he tried to deal in his revisions and the major changes that distinguish this *Handbook* from the earlier version, originally published as Working Paper No. 8, *A Task-based Model for Assessing Work Experience*.

Warren W. Willingham
CAEL Project Director

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PREFACE

The Work Assessment Model described in this *Handbook* is fairly specific in its objectives and, therefore, does not necessarily apply to all or even most of higher education institutions offering work experience programs. Furthermore, the specificity of some of the procedures described should not be construed as an attempt to dictate how the assessment process should take place on the college campus. Although the prototype assessment instruments can, in many cases, be immediately employed in practical assessment situations, they should be viewed primarily as illustrative materials that could serve as models for further development by the individual college.

This *Handbook* is a revision of CAEL Working Paper No. 8, *A Task-based Model for Assessing Work Experience*. It differs from the previous version in a number of significant ways. Material that did not directly contribute to the understanding or use of the model was eliminated. Additional examples are given to further clarify the use and application of the model. A major chapter evaluating the model was added. The first part of that chapter discusses the theoretical and practical issues which emerged from a formal review of the Working Paper; the second part summarizes the results of the field research.

The *Handbook* is organized into eight chapters. The first chapter serves as the introduction and summarizes the essential steps of the Work Assessment Model. The next three chapters provide background for the rest of the *Handbook*. Chapter II examines the relationship between work and higher education. Chapter III describes the functions of assessment and summarizes the current status of assessment of work experience at colleges and universities. The state of the art of defining work competences is reviewed in Chapter IV.

The heart of this *Handbook* is Chapter V; it describes the method of evaluating and crediting the learning outcomes of work experience. It also provides illustrations of the method's use. Chapter VI speculates on the magnitude of the costs of assessment and presents details of a way by which these costs can be calculated. The application of the model to three quite different occupational fields and how it might be adapted to other fields and implemented by the individual college is shown in Chapter VII. The model is evaluated in Chapter VIII by an examination of the critical issues raised in the review of the original Working Paper and by a summary of the results of the field research. The Appendices consist of a variety of assessment instruments including checklists, performance tests, rating forms, and oral tests in several different occupational fields.

The following persons devised the prototype assessment instruments presented in the Appendices: Samuel Livingston (Educational Testing Service) and Jude Walsh (Philadelphia Police Academy) revised the Work Experience Checklist in Law Enforcement and developed an interview schedule in the field. John Dineen (Middlesex County College) isolated practical job descriptions for Business Programmers and developed an interview schedule for programmers. Ronald Hunter (Educational Testing Service) developed the work experience checklist in Data Processing. Ronald Murphy (Educational Testing Service) developed the work experience checklist in Secretarial Science and compiled the sample measurement tasks in the field.

Additional persons who reviewed documents used in preparing this *Handbook*

were Dabney Park (Florida International University), Warren Willingham (Educational Testing Service), and Mark Ragel (Florida International University). Background information concerning needs and approaches to developing instruments and procedures for measuring competence in specific occupations was provided by: William Bergquist (Western Interstate Commission for Higher Education) in Police Science, Quentin Jones (College Entrance Examination Board) in Secretarial Science, and Arthur Kroll (Educational Testing Service) in Data Processing.

Special appreciation is expressed to two groups of people: first, to the faculty at LaGuardia Community College, Miami Dade Junior College, and Staten Island Community College interviewed by the author for their help in describing current procedures used for assessing work experience; and second, to the following persons who coordinated the field research on the assessment procedures suggested in this *Handbook*, namely Roslyn Attinson (Staten Island Community College), Sister Carol Ann Collins (Notre Dame College), Richard Fields (North Carolina A & T State University), Lorraine Hultgren (Delaware County Community College), Galan Janeksela (Wichita State University), and Irwin Pfeifer (LaGuardia Community College).

Thanks are also due to Sharon Rondinelli and Laura Lenz for typing the draft versions of this *Handbook*.

I. Purpose and Focus of Developmental Task

The purpose of this *Handbook* is to present a generalizable model for assessing specific competences in occupational fields. The model, called the Work Assessment Model, is designed to help a college to specify the kinds of skills and knowledges acquired in various occupational settings, to define the learning outcomes of its occupational and career programs, and to translate students' work experience into college credit. The sequential stages of the model are:

1. Select the occupational fields for assessment
2. Identify the competences
3. Verify that the student has had work experience
4. Relate the competences to the curriculum and to the educational goals of the student
5. Measure occupational competence
6. Evaluate and synthesize the measurement results
7. Determine the amount of credit and the level of placement

A competence is defined in this model as the ability to perform a very specific task in a specific occupational context; e.g., a policeman operates radar to identify violators of speed laws, a computer programmer prepares detailed program flowcharts or decision tables, and a machinist interprets assembly drawings and layout details when no detailed drawings are available. The model describes how lists of such competences can be developed in an occupational field and how they can be used for various objectives in higher education that require the assessment of work experience.

It is anticipated that the model will be most useful to institutions which offer occupational and career programs. It may also be relevant to colleges offering cooperative education programs, internships, and other types of sponsored programs. Since the assessment and crediting of work experience in occupations is usually performed in colleges at the departmental level, the *Handbook* may be a useful guide to department chairmen, faculty members, and other subject-matter experts who are actually involved in the assessment of work experience.

The *Handbook* illustrates the application of the Work Assessment Model to the fields of Data Processing, Law Enforcement, and Secretarial Science. The choice of these occupations was based on several earlier feasibility studies that indicated that postsecondary institutions have urgent needs to translate the experience of students in these particular occupations into college credit. Since a number of prototype assessment instruments or procedures have been developed in each of these fields on the basis of compendia of task descriptions or occupational competences, these products, therefore, are immediately applicable in a

practical assessment situation. Application of the model to other occupational fields will require further development by the individual college.

It should be emphasized that this assessment model is presented here as a guide for college faculty who are interested in evaluating and crediting the occupational competences of their students. Although this *Handbook* concentrates on three specific occupational fields and presents assessment instruments for each, it is primarily designed to serve as a model for extension and adaptation to assessment situations in other fields.

II. Work Experience and Higher Education

DEFINITION OF WORK EXPERIENCE

Work experience is defined quite broadly in this *Handbook* to include part-time work and full-time work, paid work and volunteer activities, and work performed in the home, in the community, and in industrial settings. It may also include work done by the student prior to enrolling in college (prior learning) or work done under the sponsorship and direction of the college (sponsored learning). Sponsored work experience includes programs such as cooperative education, work-study, internships, and community service activities.

Several examples of the myriad of activities and settings included in work experience, according to the definitions given, are:

- A college student spends a semester in an urban ghetto as a community aide organizing recreational activities for children.
- A homemaker manages a household and raises children.
- An Air Force serviceman learns how to repair and maintain electronic communications equipment.
- A student works as a legislative intern writing press releases for a state senator.
- A secretary who works for a property management firm learns about real estate practice and law.
- A policeman learns search and arrest procedures and how to present testimony in court.
- A free-lance writer publishes several articles in magazines.

The foregoing examples show that work experience includes many human endeavors. However, not all of life experiences, are work experiences. An arbitrary limit on the definition of work experience used here is that it occurs when an individual performs a service or produces a product for the benefit of his family, an organization, or society. Some examples of activities *not* considered here to be work experience are listed below:

- travel to another country for the purpose of learning the language and culture of the inhabitants.
- keeping up with the latest domestic and international news by reading a newspaper every day.
- reading books about the history of Western civilization.
- participating in a weekly encounter group on the college campus.

By distinguishing work experience from life experiences a sharper focus can be obtained on the assessment of work experiences. The delimitation of the meaning of work does not imply that learning activities not falling within the definition should not be assessed or that they are not creditable. The emphasis in this *Handbook* is on the assessment of "learning by doing" that occurs off the college campus.

An additional point to keep in mind in the assessment of work experience is that the primary attention should not be on the experience itself but rather on the learning outcomes of the experience. Suppose a student claims that he worked as

an electronic technician for seven years and requests the college to grant him credit. The fact that the experience has occurred for a given period of time is not by itself sufficient to evaluate and credit the learning outcomes of the experience. There is a need to determine whether the applicant has had one year's worth of experience seven times or has, in fact, acquired a large variety of skills and competences during that period.

WORK EXPERIENCE PROGRAMS AND SETTINGS

The two basic kinds of work experience programs in postsecondary institutions differ in their philosophy, objectives, and crediting procedures. *Prior learning* or nonsponsored "programs" are actually evaluation procedures that attempt to assess learnings that occur prior to the time that the student enrolls in the college. Nonsponsored learning could also occur while the student is enrolled in the college but is not working within the framework or under the supervision of the college. *Sponsored programs*, on the other hand, are those in which the work experience is arranged and supervised by the college. The major goal of sponsored programs is to supplement formal classroom instruction, and, therefore, some form of credit is usually granted to the participating student. In contrast, the major goal of many prior learning programs is to find out which competences learned in off-campus settings are the same as those resulting from formal instruction and how they relate to the student's educational goals.

Settings of Prior Learning

Prior or nonsponsored learning takes place in a variety of off-campus settings. Business, industry, and government agencies probably represent the major context in which this type of learning occurs. Although most of the learning within business organizations occurs as a result of informal on-the-job training, many companies have formal training programs that provide their employees with the skills necessary to perform satisfactorily in a given position.

The individual's home is another setting where a significant amount of college-relevant learning appears. A homemaker who manages a household and raises children may gain a considerable amount of knowledge in the areas of teaching, child care, care of the elderly, family physical and mental health, consumer awareness, and financial management.

The community is another major setting in which work takes place. Many individuals volunteer their time to their community and contribute various services to it. The work may involve tutoring or counseling disadvantaged citizens, working for candidates in local elections, planning new facilities for the community, participating in a community theater or orchestra, and being a consumer advocate for citizens. The learning gained through community volunteer activities may involve interpersonal skills, knowledge of community structure and organization, urban planning, functioning of committees, social policy and planning, the functioning of social and welfare agencies, and the financing of community activities.

Another major context for off-campus education not sponsored by the collegiate institution is the military services. The Armed Forces train individuals in a wide range of useful skills. There are literally thousands of formal resident school

courses that train servicemen to function in military occupations, ranging from guided missile technician to medical corpsman. Although many of these courses are military in nature, some are equivalent to courses taught at institutions of higher education.

In order to facilitate the access of veterans desiring to continue their formal education in civilian colleges, formal credit recommendations are made by the Office on Educational Credit of the American Council on Education, formerly known as the Commission on Accreditation of Service Experiences (CASE). One of the major functions of this agency is to review all formal resident programs of the Air Force, Army, Coast Guard, Marine Corps, Navy, and Department of Defense. The Guide published by this agency provides five items of information for each course evaluated: title, location of training, length of training, objectives of instruction, and credit recommendations at the collegiate level.[1]

Correspondence and proprietary schools have taken the lead in recent years in providing technical and vocational education at the postsecondary level. With the cry for relevance in education and the growing requirements for preentry preparation for many specialized occupations, the private school industry has been more responsive than traditional higher education to the needs of individuals who are seeking job opportunities in certain trades, and in paraprofessional and technical occupations. There are over one million students currently enrolled in the nation's 9,000 proprietary schools, most of them pursuing vocational and technical programs ranging from computer programming to truck driving. More often than not, proprietary schools provide their students with "hands-on" experience in addition to book learning. Thus, this type of experiential learning can be considered similar to other kinds of off-campus work experience, which in many cases results in certain skills equivalent to those of college students, especially to those of graduates of occupational programs in junior and community colleges.

Sponsored Programs

Sponsored work experience programs differ from nonsponsored, prior learning programs in their organization, in the crediting procedures, and, to some extent, in their settings.[2] Since sponsored programs are organized and directed towards specific purposes and objectives, the settings for gaining work experience are chosen to be consistent with these objectives.

A common kind of sponsored work experience program in higher education is cooperative education sometimes called "co-op ed." There are over 600 cooperative education programs in operation today at the collegiate level. Approximately 40 percent of this number are two-year college programs. Cooperative education had its beginning early in the twentieth century when a university professor of engineering, Herman Schneider, observed that many aspects of engineering could not be taught in the classroom but had to be learned on the job. These observations led Schneider to establish the first program of cooperative education

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[1]Cornelius P. Turner, *A Guide to the Evaluation of Educational Experiences in the Armed Services*.

[2]Two major CAEL publications are devoted to sponsored work experience: *College-Sponsored Experiential Learning–A CAEL Handbook*, by John Duley and Sheila Gordon, and *College-Sponsored Experiential Learning–A CAEL Student Guide*, by Hadley Nesbitt.

in 1906 at the University of Cincinnati. Thus, experiential learning is not a new concept or practice in higher education, and the cooperative educators deserve the credit for its introduction more than a half a century ago.

Cooperative education programs at the postsecondary level vary in their philosophies, objectives, and methods.[3] Some are patterned after many high school programs whose objective is to foster the development of occupational skills within a highly structured and specialized career program. Others emphasize career exploration by exposing the student to a wide range of experiences. In some programs, students are likely to work at one or more jobs in the course of an entire semester, whereas in others, work and study are alternated on a half-day or half-term basis. Other objectives and procedures of sponsored work programs are discussed in Chapter IV.

The internship[4] is also a popular form of the sponsored work experience program in higher education. The basic aim of the internship is to foster the development of occupational skills and to help the student to confirm entry-level plans by allowing him or her to have supervised experience in an occupation. The organization of the internship within the college is different from that of cooperative education. In most colleges there is a centralized department that arranges and supervises the co-op program, and student participation in the program is voluntary. The internship, however, is usually arranged and supervised by the academic department, and participation in it is often mandatory.

Public service and community internships may be formally offered by relevant college departments, such as political science, social work, or psychology, or they may be part of federally-funded programs designed to aid the community. The University Year for ACTION (UYA) is an example of a federal program that provides funds to university-based volunteers to assist organizations in eliminating poverty-related problems. The areas of volunteer activity include criminal justice, education, health, economic development, and housing. Since UYA requires full-time job participation in an agency by volunteers, there is likely to be a significant amount of learning in academic disciplines such as education, business, medicine, law, and social work. A full year of academic credit is granted to the student volunteer by the institution participating in the UYA program.

ACTION is the federal agency that administers the UYA and many other community volunteer programs, including the Peace Corps and Volunteers in Service to America (VISTA). Very few institutions, however, are willing to grant credit for Peace Corps or VISTA service although they are willing to award a year of credit for UYA. This situation may result from the fact that the former programs are not under institutional control and supervision, and this leads to greater feelings of uncertainty regarding the soundness and quality of the experiential learning of the student.

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[3]Barry Heerman, *Cooperative Education in Community Colleges*, pp. 9–14.

[4]Although the terms *internship* and *cooperative education* are sometimes used synonymously, *internship* is often given the special meaning described in this paragraph.

III. Assessment of Work Experience For Higher Education

MEANING OF ASSESSMENT

Although the term *assessment* is ordinarily taken to have the same meaning as *measurement* and *evaluation*, it has a somewhat broader meaning in the CAEL project and in this *Handbook*. Assessment refers to several distinct steps that must be accomplished in order to determine what the student has learned as a result of work experience and how this learning can be translated into college credit. Briefly, assessment includes the identification of what is learned by the student off the college campus, the verification of the learning experiences, the articulation of the learning to educational goals, and the measurement, evaluation, crediting, and transcripting of the learning. These procedures are brought to bear from the time that the student applies for credit or desires to participate in a sponsored off-campus learning experience up to the time that a decision is made concerning the nature and amount of credit to be granted to the student.[5]

PURPOSES OF ASSESSMENT

One of the major reasons for assessing work experience at institutions of higher education is to be able to translate the learning outcomes of such experience into degree credit. This objective stems from the fact that many of the new clientele of postsecondary education are adult workers and part-timer learners who view a college education as a means of advancing their careers. Many individuals have job experiences that need to be integrated with formal learning, especially those who are planning to major in occupational fields. Adult workers and part-time students can seldom afford to spend the same length of time in the classroom as more traditional students, and any procedures to shorten the time required for formal classroom study would be welcomed by nontraditional learners. In addition, many individuals who would not ordinarily pursue formal higher education would be encouraged to do so if they can receive credit for their work experience.

A second, but not less important, purpose of assessment of work experience in higher education is to facilitate the career and personal development of the student. Assessment allows the student to examine his or her knowledge and skills critically in the light of his or her educational and career goals. By considering their strengths, weaknesses, attitudes, and values students can make educational and career choices that are likely to be satisfying and successful.

A third function of assessment is to facilitate placement of students into appropriate levels of instruction. Students with work experience who enter college programs with various kinds of prior preparation are likely to be at different levels of readiness. Since courses in most college curricula are organized sequentially, it is important to place the student at that point in the instructional sequence that will maximize the efficiency of the instruction and the motivation of the student. Inappropriate placement of students in courses covering material that has already been

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[5]For a more detailed discussion of the stages of assessment see W. Willingham, R. Burns, and T. Donlon, *Current Practices in the Assessment of Experiential Learning*, pp. 41–43.

mastered may lead to boredom and loss of motivation. On the other hand, placement in courses without the necessary prerequisites is likely to result in inability to cope with the instruction, in frustration, and in dropping out of the course.[6]

With the greater recent emphasis on accountability in higher education, assessment is assuming a special role in the definition and evaluation of educational outcomes. Already one state legislature has mandated that all postsecondary vocational-technical programs in the state must be evaluated by objective performance criteria. In order to carry out such evaluation, a set of measurable outcomes must be specified in advance. Assessment instruments can then be developed to measure the predefined outcomes. Occupational curricula that do not meet stated objectives should be closely examined to determine why and where they fail and should be modified accordingly. Thus, an incidental, but not unimportant, result of developing valid techniques to assess the learning outcomes of work experience is the strengthening of traditional instructional programs.

EVIDENCE OF NEED FOR ASSESSMENT OF WORK EXPERIENCE

The need for measures of work experience for use in higher education is indicated by several independent sources. The Western Interstate Commission for Higher Education (WICHE) and the College Entrance Examination Board (CEEB) jointly conducted a survey in 1972 of 292 colleges in 11 states to determine the extent of need for occupational competence examinations. Of the 225 colleges that responded, 77 percent believed that there is a need for the development of standardized competence examinations in vocational and technical fields. Four out of five of the responding institutions indicated that they would be willing to grant degree credit for satisfactory performance on such examinations, and three out of five indicated a willingness to contribute manpower for test development.

Another survey[7] was addressed to the measurement and evaluation needs of vocational teacher-training institutions. More than half of the 211 teacher-training colleges surveyed indicated that they currently grant credit for job experience to prospective vocational teachers. More than four out of five colleges, however, stated that they were interested in granting such credit. Many of the colleges pointed out that their efforts to translate work experience into degree credit were hampered by the lack of reliable and valid instruments.

A project to explore the needs of postsecondary institutions for instruments and procedures to be used in assessing occupational competence was conducted in 1974 by Educational Testing Service (ETS) in cooperation with CEEB and WICHE.[8] An advisory committee of seven occupational educators representing a wide range of viewpoints provided overall guidance and policy direction to the project. Exploration and data collection were conducted by task force groups of 39 specialists in eight occupational fields. Staff support was provided by measurement specialists from ETS, CEEB, and WICHE.

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[6]For a comprehensive discussion of placement issues and tactics see Warren W. Willingham, *College Placement and Exemption*, Chapter 4.

[7]Adolf Panitz, "Measuring Occupational Competency," pp. 41–42.

[8]Amiel T. Sharon, *Planning the Development of Measurement and Evaluation Services for Use in Occupational Programs in Postsecondary Institutions*.

The focus of the study was primarily on the need to translate work-related experience into degree or certificate credit at postsecondary institutions. Eight occupational fields were selected for scrutiny: Accounting, Agribusiness, Data Processing, Day Care, Electronics Technology, Management, Police Science, and Secretarial Science. A task force delineated each field, identified and evaluated available instruments, determined procedures that needed to be developed, and suggested ways to implement new occupational assessment programs.

Although a need for occupational competence measures was identified in all the fields explored, the clearest needs were in Data Processing, Electronics Technology, Police Science, and Secretarial Science. There are many individuals without degrees in these fields who have acquired job proficiency and are likely to desire credit and placement in pursuit of higher education, especially if having a degree may have implications for career advancement. Many colleges are currently granting credit for occupational competence, and more would probably do so if suitable measures for assessing the knowledge and skill gained through work experience were available. College representatives have indicated that, to be optimally useful, such measures should parallel the curriculum so that credit can be granted on a course-by-course basis. Most of the standardized occupational proficiency examinations currently available in the eight fields, which were reviewed by the task forces, were found not to be structured to fit the curriculum and to cover dated material. A need was expressed to develop and experiment with new applications of a variety of existing assessment techniques including written objective examinations, performance tests, situational exercises, and self-assessment inventories in order to measure the cognitive, psychomotor, and affective competences acquired on the job that are relevant to the curriculum. The Advisory Committee recommended that occupational assessment programs be developed under the sponsorship of a consortia consisting of postsecondary institutions and relevant professional associations.

The foregoing study provided the basis for this *Handbook*. The model developed here has been applied to three of the four occupations in which the assessment needs were identified as being very urgent: Data Processing, Law Enforcement, and Secretarial Science.

CURRENT STATUS OF ASSESSMENT OF WORK EXPERIENCE

Since work experience programs are widespread in higher education and the assessment needs are urgent, a brief review of the current state of the art of the assessment of work experience on college campuses is in order. A 1974 CAEL survey of 266 two- and four-year colleges interested in experiential learning revealed that 85 percent of the institutions had sponsored work experience programs for which academic credit is granted.[9] About one-third of the surveyed institutions reported that they had one or more procedures to assess sponsored work experience. Among the most frequently reported forms of assessment were (1) observation of performance in natural situation, (2) diaries, essays, and reports, (3) supervisory assessment-academic, and (4) supervisory assessment-nonacademic. These findings appear to indicate a great reliance on the judgment of the college

[9]Willingham, Burns, and Donlon, *Current Practices in the Assessment of Experiential Learning*.

work-experience coordinator (or the student's mentor) and the student's work supervisor in evaluating the student's performance.

In contrast to the large proportion of institutions that grant credit for sponsored work programs, only 31 percent awarded credit for work experience that occurred prior to the student's enrollment at the college. Unlike institutions with sponsored programs, however, all prior learning programs employed some form of assessment. The most popular procedures are (1) documentation, (2) testimony from external source, (3) structured interview or oral examination, and (4) supervisory assessment-nonacademic. It is difficult to determine the exact meaning of *documentation*, but in most cases it probably involves a written statement by the student indicating and verifying that he has had a particular kind of work experience. It is evident from the results of the survey, however, that institutions were dissatisfied with this form of assessment. The most frequent assessment problem reported by the colleges was how to assess the quality of prior learning. The documentation of experience apparently was not sufficient for evaluating the nature of the level of prior learning.

Similar findings were reported in the study described earlier[10] in which task forces of occupational educators and specialists provided their opinions concerning the current status of assessing work experience in higher education. It was believed by the experts that the most common current techniques used by colleges to grant credit for job-related experience were final course examinations, subjective reviews of work experience, national achievement examinations, interviews, and locally-developed written or performance examinations. Although it is difficult to evaluate the reliability and validity of most of these techniques, it was felt that they did not meet the existing assessment needs because they were limited in their capability to establish equivalency between knowledge gained on the job and the curriculum content.

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[10]Sharon, *Planning the Development of Measurement and Evaluation Services*.

IV. Defining the Competences Acquired in Work Experience

FRAMEWORKS FOR ORGANIZING WORK EXPERIENCE

The 1970 United States Census has confirmed that the nation's workforce has become one of specialists. There are now some 25,000 different occupations, and the number is growing daily. How can this myriad of occupations, which constitutes the major context for work experience, be organized in a meaningful framework?

Before responding to this question it might be useful to define the terms *occupation, job,* and *position* in order to clarify the occupational context in which work experience occurs. A *position* is a collection of tasks or activities performed by one person. When all positions are filled in an organization, there are as many positions as workers. A *job* is a group of similar positions that involve the same duties. Several positions of a computer programmer in a company would constitute the job of a computer programmer. An *occupation* consists of a number of similar jobs. The jobs of computer operator, computer programmer, and systems analyst fall within the data processing occupation.

A number of different systems exist for grouping jobs into families. One system is based on the administrative variables associated with the job such as wages, amount of responsibility, and hours of work. Another approach to grouping jobs is on the basis of the knowledges and skills that are learned on jobs. Presumably, persons in jobs requiring the same knowledges and skills are likely to be equally qualified to receive college credit for their work experience. A third system involves grouping by the basic aptitudes, personality traits, and other characteristics of the worker that are not acquired on the job.

Although there are many different classifications of occupations based on one or a combination of the foregoing systems, the most comprehensive of these is that presented in the Dictionary of Occupational Titles (DOT),[11] which was developed by the U.S. Employment Service on the basis of extensive study of the nature and requirements of jobs. Each of the 22,000 occupations defined in the DOT is incorporated into a classification which reflects the kind and level of work performed. All occupations are grouped into nine broad categories according to some combination of work field, purpose, material, product, service, subject matter, generic term and/or industry. The nine major categories are

Professional, technical, and managerial occupations
Clerical and sales occupations
Service occupations
Farming, fishery, forestry, and related occupations
Processing occupations
Machine trades occupations
Benchwork occupations
Structural work occupations
Miscellaneous occupations

The advantage of the DOT system is that its complete coverage of jobs allows

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[11] U.S. Department of Labor, *Dictionary of Occupational Titles.*

one to evaluate the similarity and interchangeability of jobs. Furthermore, it expresses each job's relationship to Data, People, and Things.[12]

The use of job classification systems may be helpful to colleges that desire to focus their assessment on a limited number of occupations or clusters of occupations. Such systems are likely to provide a useful framework for starting with the first step in assessment: identifying skills and competences that are learned on the job.

IDENTIFYING OCCUPATIONAL COMPETENCES: JOB AND TASK ANALYSIS

The Work Assessment Model to be described in the next Chapter is based on a detailed description of the activities typically conducted within an occupation. It is, therefore, important to understand the procedures by which occupations and jobs are analyzed and the way by which the competences of workers are described.

Job analysis is the term that is used to describe the systematic process of collecting information regarding the nature and conditions of work in a given job. The job analyst uses a variety of methods to collect the required information. He may observe workers on the job, interview them, or have them complete a questionnaire. He may study the materials of work, published manuals or bulletins, or he may actually perform the job himself. The end result of the job analysis is a description of the manner in which workers on the job actually perform the work and the actual conditions in which the work is done. The job description will include some of the following information: (1) present methods of work including duties, tasks, responsibilities, materials, tools, and standards of output; (2) physical conditions of the workplace; (3) relation of the job to other jobs, such as specification of assistants and co-workers; and (4) conditions of employment, including selection methods, pay, and opportunities for advancement.

A kind of job analysis that identifies the duties, tasks, and elements of the job is called *task analysis*. This type of analysis provides activity statements sufficiently detailed to make it possible to determine the knowledges, skills, and abilities required for successful learning and performance on the job.

It was mentioned earlier that a job is a group of similar positions whose holders have essentially the same duties and tasks. All jobs have a basic structure that makes it possible to analyze their activities in some detail. The hierarchical arrangement of activities falling within a job are the duties, tasks, and elements. The major subdivision of the work done by one individual on a job is a *duty*. A job is composed of one or more duties generally regarded as the major responsibilities of the job. "Typewriting" and "record keeping" are two duties of the secretarial job. Two duties of a policeman's job are to "respond to emergency situations" and to "investigate crimes."

The work activity units that make up duties are called *tasks*. A task occupies some portion of the worktime spent in accomplishing a duty and involves very closely related competences. Thus, a task has the same relationship to a duty as a duty has to a job. Some examples of tasks of a secretary falling under the duty of "record keeping" are as follows:

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[12]For further discussion of this aspect of the DOT, see Paul Breen, Thomas F. Donlon, and Urban Whitaker, *Teaching and Assessing Interpersonal Competence–A CAEL Handbook*.

- Keeping an inventory of stock on hand.
- Keeping a record of and affirming appointments for employer.
- Recording business expenses in a cash payment journal.
- Filing, using a standardized system with a means for cross-referencing, indexing, and coding.

Many qualifications of the worker can be inferred from a list of task statements describing a job. For example, one can infer that a building equipment maintenance repairman who "replaces filters for heating and air conditioning units" knows how to "remove guards and cover plates" to the units since this is an essential element of the task.

Often it is desirable to translate the task statements to statements of the knowledges, skills, and abilities in order to describe the competences that workers must possess in order to be able to perform a job. The knowledges are the specific information the worker must know. The skills are the manipulative capabilities required. Abilities refer to the physical and mental attributes, such as the requirement for 20/20 vision. An example of the specifications of the competences required for a task are shown in the following example.

Position:	Urban Planning Data Collection Aide
Task:	Count people, cars, trucks, etc. passing a specific location in a specified time period and record tallies on data collection sheets.
Competences:	Ability to operate hand-held mechanical devices for counting furnished by employer. Knowledge of how to set and reset alarm-type wrist watch for specific timing periods. Ability to locate self in relation to subjects to permit accurate counting.

It is possible to subdivide tasks into even smaller units of work activity called *elements*. An element is the smallest unit that can be meaningfully employed to describe a work operation without actually analyzing individual motions, movements, and mental processes. The elements within the task "Remove guards and cover plates of blowers and fans in heating unit" may consist of the four following elements:

- Remove screws with wrench.
- Grasp plate by tabs.
- Rotate plate until released.
- Pull plate out.

Job and task analysis procedures generally result in descriptive statements of the duties, tasks, and elements of a job. For the variety of readers who will use the descriptions it is important to phrase them in a clear and unambiguous manner. It is best to avoid words such as *know, appreciate,* or *understand* in the task statements because they do not refer to observable behavior. Instead, it is better to use verbs that describe explicitly what the worker is able to do, e.g., *operate, adjust,* and *repair.*

Although job analysis procedures are used primarily to solve personnel problems in industry, their application to higher education stems from the need to provide definition to learning outcomes in career and occupational programs. The next section analyzes the kinds of skills and competences learned in collegiate work experience and proposes methods for providing explicit definitions to learning outcomes.

EDUCATIONAL OBJECTIVES OF WORK EXPERIENCE PROGRAMS

Broad Educational Goals of Sponsored Programs

The job and task analysis methods for describing competences acquired on jobs are likely to have great applicability to work-study programs in higher education. One of the primary objectives of work programs is to foster the development of skills necessary to secure employment in a specific occupation. The definition of such skills is likely to be facilitated by the development of behavioral objectives and task statements. Since the development of occupational skills is only one of several broad educational goals of sponsored work experience programs, a brief review of these goals will be useful.

Since the classroom offers only a limited opportunity for "hands-on" learning, work experience allows the student to learn new job skills and reinforces classroom teaching. Students learn to appreciate and relate classroom learning to many work situations. This objective applies primarily to students who have already decided on a semiprofessional, middle management, or technical occupation in which to work after graduation.

Work programs allow students to explore various career possibilities. Some programs encourage students to try out more than one career area in order to provide them with an opportunity to find out which areas are consistent with their skills and abilities. Thus, even unsatisfactory experiences may have an important educational significance for the student.

Promoting the student's personal growth is yet another objective of work programs. In addition to acquiring specific occupational skills and learning to assume responsibility for actions, the student, through work experiences, becomes sensitive to formal and informal relationships in a working organization; develops the social skills, such as appearance and punctuality, required in a work situation; learns the ingredients for success in an occupation by observing practitioners; and develops the motivation and self-confidence that will facilitate the successful completion of a college degree program.

Work experience programs have several incidental outcomes which, although not major objectives, provide distinct benefits to the student. Employers will often hire students who worked for them. Thus, the student with work experience has a better chance of landing a job, receiving good pay, and being promoted than does the student without such experience. This fact is particularly important for culturally deprived minority students who may not be able to acquire positions of responsibility without the efforts of the college. Although the wages paid to students are generally much lower than wages paid to permanent full-time workers, the earning of money can give many students a sense of economic independence and can help them pay for their college education.

Defining Explicit Objectives

The broad objectives of sponsored work-experience programs are essentially educational philosophies rather than detailed prescriptions for behavioral change. They are not outcomes that are spelled out in sufficient detail to indicate the specific behavioral changes that are expected to occur in the student. Unless it is possible to specify the behavior expected of students at the end of a particular experience, it would be difficult, if not impossible, to determine whether the goals of

the experience have been achieved. The worth and credibility of an experiential learning program without explicit objectives might be open to question. Furthermore, with the setting of unambiguous and explicit objectives, the student would be in a better position to know what is expected of him or her at the end of the work experience, and would, therefore, be better able to focus on the relevant aspects of the work.

One formula for defining educational outcomes in a fairly explicit manner was devised by Mager.[13] According to Mager's formula, the proposed change in the behavior of the student is described by developing performance or behavioral objectives. Performance objectives have three essential characteristics. First, they identify what the student must be able to do at the end of a course of instruction. Second, they describe the conditions under which the behavior is expected to occur (e.g., tools, equipment, job aids, references, etc. are specified). Third, they describe the level of the terminal performance that must be demonstrated in order to be considered acceptable and may involve the specification of quality, quantity, and time standards. A behavioral objective to measure the telephone skills of a secretary might be phrased as follows:

> Given an oral description of a hypothetical telephone conversation, the secretary will record the message using the following form. An acceptable message will include:
>
> 1. Caller's name and/or title
> 2. Date of call
> 3. Time of call
> 4. Message
> 5. Caller's telephone number
> 6. Name of person taking message

A behavioral objective to measure the performance of a policeman in patrolling a business neighborhood might be phrased as follows:

Condition: Given a post or patrol area during normal business hours with a number of business establishments to be checked.

Task: Observe business establishments through doors and/or windows to determine whether conditions inside are routine.

Standard: All checks must be made at least twice on each shift. Regularity is avoided. Maintains a safe area by patrol, with good police relations with business community.

Mager's procedure was the precursor of the learning objectives approach currently being employed in many college work experience programs. Learning objectives have several purposes. First, they can be used to verify the growth and progress of the student toward a specified objective. Second, they contribute to opening dialogue between the student, faculty coordinator, and employer. Third, the preparation of measurable learning objectives teaches students an important lesson, pointing out the value and purpose of a planned course of work-study. Finally, with clearly stated objectives both the student and his evaluator have a means by which the students' progress can be measured.

Learning objectives are statements that describe what the student will be able

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[13]Robert F. Mager, *Preparing Instructional Objectives*, p. 12.

to do, how he or she will do it, and how his or her accomplishments will be evaluated at the end of the time limit specified. Examples of learning objectives are:

1. By December I will be able to complete the company's tax return without error.
2. By December I will be able to produce a floor plan blueprint for six different structures.
3. By June I will be able to input 7 new programs into the BC 3500 computer without error.
4. By June I will be able to prepare 5 initial case files for new welfare clients.
5. By February I will be able to prepare 10 different tissue samples for viewing with an electron microscope, without error.

In any postsecondary occupational preparation program involving a combination of classroom study and work experience, it is possible to identify at least four different types of objectives or outcomes.[14] The first class of objectives are broad educational objectives that describe what the individual learner will be prepared for at the end of a period of integrated work and study; e.g., "a student will prepare to work as an electronics technician after completing two years of relevant work and study." This type of objective is generally defined by the college faculty and administration in conjunction with an advisory committee of experts in the field. The second class of objectives relate to the outcomes of formal classroom instruction. Here the objectives are fairly specific and are described in terms of behavioral or performance objectives. The classroom instructor is primarily responsible for setting the classroom objectives. The objectives for the sponsored work experience are also explicit and described in behavioral terms, but they are defined jointly by the work-study coordinator, the student, and the employer. The final kinds of objectives are those setting forth the results of the interrelating of work and study. They are frequently measured by a report in which the student describes his understanding of the relationship of classroom learning and the work experience.

In focusing on the goals of the work experience itself, it is possible to distinguish several different kinds of micro-objectives prepared by students in consultation with their faculty mentors and employers. The following list includes several classes of objectives with examples of each:

"A. Routine Objectives
   (1) To determine how to complete equipment checks each day by 3 p.m.
   (2) To establish a routine for reporting all violations

B. Problem-solving Objectives
   (1) During this semester I will personally investigate all equipment failure to search for contributory cause of failure
   (2) During this semester I will collect data and investigate all accident reports to determine a safety checklist.

C. Creative Objectives
   (1) By January to develop and introduce a statistical quality control system for the department
   (2) By June to develop an electronic order finding system in the warehouse

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[14]Barry Heerman, *Cooperative Education in Community Colleges*, pp. 124–137.

D. Personal Objectives
   (1) During this semester to develop and improve presentation to customers
   (2) During this semester to apply new methods in conference leading to those meetings I must lead

E. Results-centered Objectives
   (1) By February to have a practical knowledge of the use of the multimeter
   (2) During the semester I will install an accounting system for my department
   (3) By February to revise a minimum of ten written and practical tests for industrial relations operations"[15]

Although the foregoing examples of objectives are not described in terms of Mager's system, they are nevertheless specific enough to indicate to the student and his or her faculty advisor whether a particular objective has or has not been reached at the end of the semester.

An occupational program in which the learning outcomes are defined in specific behavioral terms is likely to facilitate the articulation of work experience to the formal curriculum as well as to strengthen the entire instructional process. Unless a learning outcome or an objective is explicitly defined, it is difficult to judge the extent of student learning and whether there is a need to modify or improve the instructional process. Of equal importance is that the assessment of work experience becomes more meaningful and objective when explicit learning objectives are defined. The next chapter describes an assessment model whose foundations are based largely on explicit learning objectives.

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[15]These examples are from V. N. Redding, J. E. Garman, and K. S. Strandberg, *A Manual for Students in Cooperative Education*, Costa Mesa, California, Orange Coast College, 1971, pp. 5–6. Cited by Heerman, pp. 129–130.

V. Work Assessment Model

RATIONALE AND PURPOSE

Developing an assessment model for work experience is very much like building a model railroad to provide guidance in the construction of a real line of rails on which real locomotives and cars roll. The model can be helpful in supplying certain vital information, such as that relating to the shape and dimensions of various structures. It might be less helpful, however, in explaining the internal workings of a locomotive engine or how to prepare a roadbed for laying ties and rails. A work assessment model can aid the college in defining the learning outcomes of its occupational and career programs, translating students' work experience into college credit, and specifying the kinds of skills and competences that are acquired in various occupational settings. On the other hand, the model can provide little guidance with respect to the financial, political, and administrative factors that are required to make the evaluation of work experience a successful enterprise on the college campus. The college must use its own resources to solve problems such as how to finance the development and administration of assessment, how to involve the faculty and community in the process, and how to overcome administrative bureaucracies that tend to impede innovation and progress in higher education.

To carry the railroad analogy a bit farther, it may be noted that trains are only one of several modes of transporting cargo between two points. Alternate carriers of freight, such as trucks, airplanes, and ships, may be more appropriate in a particular situation depending on the nature and quantity of the goods and merchandise to be shipped, the cost of shipping, and the availability of alternate carriers. Similarly, the model presented here is only one of several different ways by which work experience can be assessed. Whether the model applies to any particular institution will depend on a host of specific local factors, such as the goals of the institution's educational programs, the nature of its student population, and the amount of resources that can be allocated to the assessment process.

The Work Assessment Model focuses primarily on competences and skills that are acquired in specific occupational fields. Although the model is designed to apply both to prior learning and to sponsored programs, it is not necessarily consistent with the educational philosophies and objectives of all postsecondary occupational programs. The model is likely to be most relevant to those programs that aim to foster technical and conceptual skill development in an area of occupational specialization. It may also be appropriate, however, to programs whose major thrust is to facilitate effective career planning and career exploration. The model assumes that there are unique assessment problems associated with prior and sponsored learning. Simply stated, the problem with prior learning is how to translate the learning outcomes of work experience into college credit and appropriate placement. The basic question with sponsored learning is how to develop the objectives of a sponsored work experience and how to determine whether the objectives have been met.

It is expected that by following this model colleges will be able to

1. Select a number of occupational curricula in which assessment will occur.
2. Develop a compendium of competences in an occupation.

3. Determine what students have learned as a result of their job experiences.
4. Verify the nature and extent of students' work experiences.
5. Specify the learning objectives of occupational programs.
6. Specify the educational goals of the student and relate them to the occupational curriculum.
7. Develop and administer measures of occupational competence.
8. Evaluate measurement results by developing norms and standards.
9. Decide on the amount and nature of credit to be awarded.

Although the Work Assessment Model is quite specific in its procedures, it does not attempt to dictate which occupational skills are creditable. It describes a procedure that can be used to map out the occupational competences of the student in clear and unambiguous terms as the first step in deciding whether any of the learning outcomes of work should even be considered for credit. Once it is known what the student has done on previous jobs, then the college is likely to be in a better position to measure the competence level of the student and decide whether it merits credit.

DESCRIPTION OF THE MODEL

The Work Assessment Model is based, in large part, on the six stages of assessment originally defined in the CAEL Project.[16] Basically, these are clearly distinguished steps which are usually, but not necessarily, performed in sequential manner. The *first* step is to identify the kinds of competences acquired through life experience—a phase both obvious and critical. It is difficult to measure a student's competence without knowing what to measure. The *second* step is to document or verify that learning experiences have actually taken place. This may involve written statements by a student or his work supervisor or the presentation of official documents such as certificates or licenses. The *third* step is to articulate or relate the off-campus learning to the college curriculum and to the student's educational goal. Implicit in this step is that not all work or life experiences are relevant to higher education or are necessarily creditable. The *fourth* step is to measure the skills and competences that have been identified in step one. Measurement refers to the assignment of a trait, behavior, skill, or competence into a predefined set of categories (e.g., low, medium, high), which often have numerical values assigned to them (e.g., 1 to 10). Measurement would indicate the degree or level of a skill that is possessed by the student. The *fifth* step is to establish standards and to evaluate the measurement results by determining whether the competences measured meet the defined standards. The *sixth* step is to place the student at an appropriate level in the curriculum and award him academic credit.

Figure 1 indicates in chronological sequence the activities that take place in the Work Assessment Model and the relationship of these activities to each other. All activities described by the model can be classified into three types: student-centered, college-centered, and joint activities. The student-centered activities are accomplished primarily by the student. The college-centered activities are conducted by the college's admission office, assessment center, teaching faculty, department heads, and/or student mentors. The joint activities are ones in which the student interacts in some way with the instructional staff of the college.

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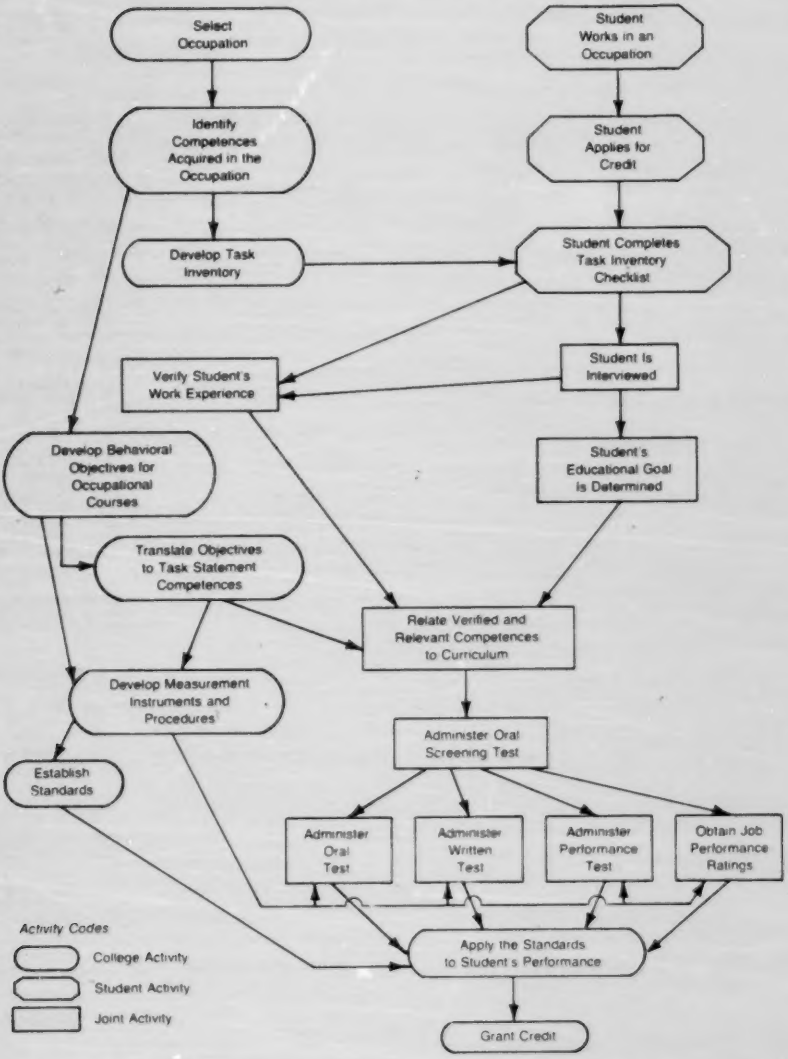
[16]Warren W. Willingham, "Critical Issues and Basic Requirements for Assessment."

Figure 1
Work Assessment Model for Prior Learning



The model for prior learning begins with two independent strands of activities. The student is employed off the college campus and acquires experience in a particular occupation. The college selects that particular occupation along with several others as target fields in which to develop assessment procedures. Each college department that offers programs preparing students for one of the target occupations identifies, on the basis of job and task analyses, the competences acquired by workers in that occupation. Faculty members with expertise in the requirements of the occupation develop an inventory of the duties and tasks in the field.

The student with work experience applies to the department for credit and is asked to complete a task inventory checklist which is used to map out in detail what he or she has done on previous jobs. This checklist becomes part of his or her portfolio. The completed checklist is reviewed by the department chairman in preparation for an interview with the student. The interview is used to amplify, clarify, and verify the information given by the student on the task inventory checklist. During the same interview, the student's educational goal is explored and defined, and a proposed sequence of courses for meeting the goal is established.

The inventory of duties and tasks in the field is used to identify the outcomes of the occupational courses in a specific curriculum. The instructor of each course indicates whether the ability to perform a specific task is one of the expected outcomes of each course. Thus, the outcomes of each course are described in terms of lists of task statements.

It is possible at this point to relate the student's work experience to the occupational curriculum because both are now described in terms of the common denominator of job task statements. Thus, the outcomes of each course are compared with the student's competences on a task-by-task basis. If the student has performed a large number of tasks that are indicated as outcomes of a particular course (or courses), then the level of proficiency of his or her occupational skills, which are the outcomes of the course, are assessed.

An oral test given by the department chairman or his representative may be used first to screen out students who obviously have no knowledge or skill in the occupation. Depending on the field, measurement of occupational competence could involve oral, written, or performance examinations or ratings of job supervisors. A combination of these measures is likely to be more useful than only one.

The measurement instruments and procedures used for assessing the level of the student's knowledge and skill are developed on the basis of the behavioral objectives previously established for each course in the occupational curriculum. For each measurement procedure, standards of acceptable performance are established. After the tests and other measurement procedures are administered to the student, the standards are used to evaluate and synthesize the measurement results. If the student's performance is at or above the standards, degree-related credit is awarded. The amount of credit is equivalent to the credit of courses whose outcomes the student has achieved.

The following section describes in greater detail what is involved in each step of the Work Assessment Model.

Select Occupational Fields

Since the Work Assessment Model is an occupation-based procedure for evaluating work experience, a necessary first step is to select one or more occupational fields in which assessment will take place. Of the 25,000 occupations in existence in the nation today, the college will have to choose a limited number so that the assessment of skills learned in the particular occupations chosen will be of maximum benefit to the college, to its students, and to the community. Because of differences in a variety of local factors, the choice of the occupations will naturally vary from college to college. Listed below, in order of importance, are some of the criteria that should be considered in the selection process.

1. It is reasonable to consider only occupations that are taught within the occupational and career curriculum of the college. Although it may be important to assess skills that are not part of formal course outcomes or cannot be readily integrated with formal learning, such assessment should not receive priority. This criterion will reduce the number of occupations to a manageable number from which priorities among the fields can be established.
2. Occupational programs in which a large number of students are enrolled should receive priority over those with small numbers. The cost-effectiveness and the benefits are likely to be greater in programs with large enrollments.
3. Priority should be given to occupations in which a relatively large number of students gain work experience. Many colleges have specific kinds of employers or industries within their locality in which large numbers of students are employed prior or during their attendance at the college. For example, if there is a large electronics manufacturing firm near the college, there may be many technicians without degrees who are likely to desire credit. In urban and metropolitan areas where all kinds of employers and industries exist, attempts should be made to identify the occupations in which large numbers of individuals without degrees gain work experience and would like to pursue higher education. In certain occupations such as engineering, very few workers without degrees are likely to be engaged because a college degree is required for entry into the field. The occupations with best possibilities for assessment are likely to be vocational-technical fields, such as auto mechanics, electronics, and data processing; paraprofessional occupations, such as those in allied-health and social work; office occupations, such as midmanagement and secretarial; and service occupations, such as law enforcement.
4. Priority should be given to occupations with good prospects for growth in employment.
5. Priority should be given to occupations where assessment is economically feasible. Economic feasibility will depend on (1) available sources of funding, (2) ease of measurement of relevant skills and competences (e.g., whether or not performance testing is necessary), (3) potential volume of candidates, and (4) availability of trained assessors.

Identify Competences

Once a target occupation for applying the Work Assessment Model is chosen, the learning that occurs in that occupation should be specified in detail. This specification, conducted independently of the students whose experiences are to be assessed, consists of a comprehensive review of the results of the analyses of the jobs and tasks involved in the occupation.

The competences acquired on jobs can be described fairly broadly, such as "the ability to recognize situations in which data processing techniques can be applied to business operations," or more explicitly, such as "the ability to devise sample input data to provide test of program adequacy." Competences can be described in terms of basic human aptitudes or skills such as "verbal fluency" and "manual dexterity," or in terms of job tasks such as "write programs to convert tapes from one computer to another." The smaller the unit of description, the more stable and accurate it is likely to be. The problem of communicating what has been done on a job is minimized because it is possible to form a clear mental image of the task.

Developing a Task Inventory. A compendium of task statements can be developed to define the competences that are typically acquired in an occupation. It can serve as the base for defining the outcomes of occupational courses, identifying the competences of the student, and developing measurement instruments and procedures to assess the student's occupational competence. A list of all the significant tasks that may be performed by employees in a given occupation is known as a *task inventory*. Each task in such an inventory is described in fairly specific behavioral terms. (See Appendices A, E, and H for task inventories in the fields of Data Processing, Law Enforcement, and Secretarial Science.) A variety of sources of information can be consulted in producing a task inventory for a given occupation. These include previous job descriptions and task inventories, training manuals, faculty members who teach the subject, and practitioners in the field. If possible, an inventory should be reviewed by committees of job incumbents to ascertain that the task descriptions are clear and adequately cover all of the activities conducted on the job.

There are at least two clearinghouses that collect and make available lists of tasks in various occupational fields. The *Task Inventory Exchange* (at the Center for Vocational Education, Ohio State University, 1960 Kenny Road, Columbus, Ohio 43210) publishes a *Directory of Task Inventories*. Occupational task inventories are available from either the Exchange or their developers. The *Instructional Objectives Exchange* (P.O. Box 24095, Los Angeles, California) distributes instructional objectives based mostly upon curricular material submitted to the exchange by educators. Measures have been developed by the *Exchange* staff to assess the attainment of some of the objectives.

Since several hundred relatively discrete tasks can be used to describe most jobs, the tasks should be organized into meaningful categories. One way to do this is to consider each task as part of a general job duty or activity and list it under that activity. For example, the task "keeping records of supplies ordered or received" falls under the general job duty of "Record Keeping."

The job-task inventory can serve primarily as a means by which the student can describe the nature and extent of his or her work experience. The student can consider each task and indicate whether he performed a task on previous jobs and the relative amount of time that was spent on it. The task inventory checklist prompts the student to recall and to report what was done in the past.

Using a Task Inventory. In order to understand how a task inventory can be used by the student, it is necessary to examine current procedures for granting credit and placement in college-level career and occupational programs. Responsibility for assessing occupational competence and granting credit is often vested in the individual college department. Although the initial screening of the student may be conducted by a central office on the campus, the actual assessment of work experience requires the subject-matter expertise of the teaching faculty. Usually one person within a department, often the department chairman, is responsible for interviewing the students and for coordinating the assessment process in one or more relevant occupations. Thus, when a student desires credit, he or she is often interviewed first by the department chairman, who may then refer him or her to other faculty members for further assessment.

The task inventory checklist completed by the student can be a useful prelude to the interview between the student and the department chairman. In the course of a typical interview, the interviewer might ask the student where he has worked, for how long, and what he has done. The comprehensiveness and specificity of the student's responses to questions about his job experiences will depend on the nature of the questions and on his ability to recall specific work activities. The student may not be able to recall and verbalize "off the top of his head" all the significant occupational competences that he believes he possesses. If the task inventory checklist was completed prior to the interview, both the interviewer and the student will be in a better position to focus on the relevant aspects of the work experience. The interviewer would frame his questions according to the information on the checklist, and the interview would clarify and expand upon that information rather than merely repeat it. The checklist, therefore, can help to elicit from the student the competences that he or she has acquired.

It should be noted that the use of the checklist suggested here is for descriptive purposes rather than for the measurement and evaluation of work experience. That is, the objective is to describe *what* has been or presumed to have been learned, not *how well* it has been learned or whether it is *creditable*. Subsequent steps of the Work Assessment Model focus on procedures for verification, creditability, measurement, and evaluation.

Verify That the Student Has Had Work Experience

The problem of verifying that the student has had prior work experience applies to both prior learning and sponsored programs. The problem exists at two levels. On one hand, there is a need to verify that the student has, in fact, worked for a particular employer in a specific position for a stated period of time. On the other hand, there is a need to verify the specific duties and tasks which the student claims were performed on the job. A student who has worked in a position of a secretary, for example, may have been limited to filing and typing, whereas

another student in the same position may have composed his or her own correspondence and supervised typists. Thus, it is necessary to substantiate that the specific tasks reported by the student were actually accomplished.

There are a number of ways to confirm that the student has had experience or has reached a minimum level of competence in an occupation. The possession of a certificate or a license required to practice in a particular occupation can be prima facie evidence of training, experience, or competence. Licensing, the legal right of an individual to engage in an occupation, is conferred by a governmental agency in order to protect the health and safety of the public. Among the various kinds of requirements for licensure are citizenship, literacy, good health, good moral character, minimum age, minimum general education, graduation from an approved training program, and passing examinations offered by state boards. Certification, in contrast to licensing, usually involves the formal recognition of an individual's competence by an occupational or a professional association. The requirements for certification often include the completion of a specified amount of work experience, graduation from an approved program, and satisfactory performance on an examination. In order to become a Certified Professional Secretary, for example, one must have three years of verified secretarial experience and must pass a series of six examinations. Thus, if a student presents a certificate or a license, it is necessary to investigate the qualifications required to attain it before it can be used as evidence of the student's work experience in a particular occupation.

Checking with a job applicant's former employer is a common procedure used in industry to verify and assess the quality of previous work experience. Calling by telephone is a relatively cheap and easy way to check with a former supervisor, but the amount of information that can be obtained is fairly limited. The mail method is perhaps more useful than telephoning in soliciting opinions in greater detail. However, there may be no response to a mail request for verification, often because of the desire not to hurt a former employee or because of unwillingness to take the time to complete the reference form. A personal visit to the former or present employer of the student is likely to yield more accurate and useful information on past experience than either the telephone or mail procedures. Although it is expensive and time-consuming, a site visitation is often worth the effort because it can provide the "full story" necessary not only to verify the performance of specific activities, but also to obtain a notion of the quality and breadth of the experience. A personal visit is particularly valuable if several students are or have been working for the same employer.

The second aspect of substantiating work experience has to do with whether specific tasks have been performed. This aspect is more difficult to verify because it involves a detailed review and confirmation of each of the tasks the student claims to have performed. Job descriptions provided by former employers should not be relied on to indicate the student's competences because such descriptions are frequently grossly inaccurate. One way to obtain verification is to request the student's former employer to complete a task inventory checklist in relation to the position which was held by the student. Although the work supervisor is likely to be the most knowledgeable person concerning what the student has done on the job, it may not be always possible to obtain his or her judgment. First, the student's immediate supervisor may no longer be in the company or agency where the

student worked, and no one else may be sufficiently familiar with the student or with the position to provide an adequate verification. Second, the accuracy of the information provided by the supervisor will depend on whether he or she has observed the student over a sufficient period of time and whether he or she is willing to devote time to reviewing all of the tasks on the checklist.

In many cases it may not be possible to verify that specific tasks have been performed. In such cases, the verification step can be combined with the measurement and evaluation phase of assessment. For example, if a former computer programmer claims that she has programmed computers using the COBOL language, then she might be asked to debug or produce such a program. If the student is successful at this task, then it can be assumed that she has performed it frequently in the past. Similarly, if a secretary claims that she had done typing, then she could take a typing proficiency test to demonstrate her skill.

Relate Competences to the Curriculum and to the Student's Educational Goals

In attempting to relate the student's skills and competences to the occupational curriculum, it is first necessary to determine the educational goals of the student. Presumably many students who enroll in career and occupational programs have fairly well-defined objectives in terms of jobs in the world of work—e.g., systems analyst, police sergeant, executive secretary. This is especially true for students who have had prior experience in an occupation direcly related to the instructional program. In many occupations there are both monetary and intrinsic incentives for the worker to enroll in a postsecondary program leading to a degree. Students in sponsored work programs, however, often do not have clear career objectives and tend to use their work experiences for career exploration and preparation as well as for personal and social development.

It is possible to plan an educational program for the student whose goal is stated in terms of a specific work position. If the outcome of an occupational curriculum is clearly defined, then it will be possible to predict the kinds and levels of skills that the student will have upon graduation. For students who have either prior or sponsored work experience, there is a need to determine how this kind of experience can be integrated into the curriculum. Sponsored programs tend to be structured to supplement rather than duplicate classroom instruction. Skills learned by students prior to enrolling in formal programs, however, are often the same as those learned by students in the curriculum. It is evident from the compendia of competences listed in Appendices A, E, and H that a large variety of tasks can be performed in any occupation, and it is doubtful whether all are relevant to the occupational curriculum. That is, there are many competences that are learned only on the job and are not part of the objectives of formal courses. For example, competences that might not be part of formal instruction in Law Enforcement are "Issuing moving traffic citations" and "Treating emergency childbirth."

The model described here focuses on the assessment of those skills and competences learned on the job as well as on those learned in the classroom. This emphasis assumes that both course objectives and student skills can be defined operationally and are measurable. For an articulation or equating procedure to be successful, the learning in traditional and nontraditional settings must be defined

and measured in the same units. Unless the skills acquired in the classroom and on the job can be described in the same manner, it would be difficult to translate one to the other or to find out how work experience supplements or contributes to formal learning.

The use of a job task inventory could be one way to provide a common denominator for the equating of prior learning to the curriculum courses. Faculty members teaching in a department would identify the objectives of the courses that they are teaching. Each instructor would then complete the task inventory for his or her particular course and would indicate whether the ability to perform the task is one of the objectives of the course. This would represent a set of behavioral objectives for the course. The student, who would also complete the task inventory checklist to indicate which tasks he performed on previous jobs, would then attempt to match his set of skills to the outcomes of one or more courses. A physical analogy to this process might be the use of several different scoring keys or templates (the course outcomes) on an answer sheet (the student's responses on the checklist). Those keys yielding perfect or near perfect scores would suggest that the student may already possess the knowledge and skill outcomes of the courses represented by the keys and that he is ready now for the measurement and evaluation phase of the Work Assessment Model.

The Work Assessment Model and the job task inventory are also applicable to sponsored learning. The prospective employer of students would complete the task inventory checklist in order to inform the college of the kinds of activities students will perform on the job. The college work experience coordinator or faculty member would use the checklist to inform the student what to expect to learn on the job. The student would use the checklist following the sponsored work experience to communicate to the faculty what he or she has actually done on the job. The measurement and evaluation phase of the model which would then follow would be conducted essentially in the same manner in sponsored learning as in prior learning.

The learning objectives approach described in Chapter IV is also useful for identifying the expected outcomes of sponsored work experience. The learning objective describes in a general way what and how the student is expected to learn on the job. By identifying the learning objective, it is possible to determine how it complements formal instruction and how it teaches the student to apply what was learned in the classroom.

Measure Occupational Competence

The measurement of occupational competences that are relevant to the curriculum and to the student's educational goal is the heart of the assessment process. Up to this point the student's competences were identified, verified, and related to the curriculum, but they were not actually measured. In order to be able to place the competences on a quantitative scale indicating level or degree, it is necessary to consider one or more techniques that are most suitable for measurement of the relevant competences. The application of more than one measurement procedure to assess skills is likely to increase both the reliability and validity of the assessment. Several different kinds of prototype measurement instruments are presented in the Appendices of this *Handbook*, but no attempt is made here to present detailed instructions on how to develop occupational competence measures.

Oral Testing. Probably the first procedure that could be most logically employed is an oral test. Usually this kind of test can be made part of the initial interview with the student seeking credit. Unlike the interview, which was recommended for the earlier steps of the assessment process, the oral test is a highly structured and staged interview designed to measure the level of knowledge in the field. (Oral tests in Data Processing and Law Enforcement are presented in Appendices C and F, respectively.) Depending on the occupational field and on the circumstances, the initial oral test could be followed by one or more additional oral tests that are more focused on a specific area, or by other measurement techniques. The oral test can be used as a screen or a filter to determine whether further assessment, in greater depth, is necessary or whether the level of the student's skills and knowledge are obviously not at a point where they could be creditable. Because measurement is expensive and requires both faculty and student time, this initial screening interview is likely to make the measurement process more efficient and cost effective.[17]

If it can be established during the screening interview that the student is sufficiently knowledgeable in certain aspects of an occupation, then he can move on to the next stage of assessment. This stage involves an in-depth investigation of the student's knowledge and skill in the subject matter of a particular course. The faculty member who is teaching the particular course is probably the most appropriate individual to conduct this final probing. If the subject matter is not within the domain of faculty expertise, experts outside of the campus will have to be consulted.

Written Testing. There are a number of different techniques that can be employed at this stage of assessment, depending on the occupation, on the skills to be assessed, and on the availability of resources for the assessment process. Written objective examinations are often appropriate for the measurement of job-related knowledge. Occupational knowledge includes not only the vocabulary, practices, and principles of an occupation but also the knowledge of how to apply the principles. Although paper-and-pencil tests are low in cost to administer, they cannot measure skills such as manipulating equipment, debugging computer programs, interacting with clients, or solving problems that are difficult to simulate in a written format. Because there are a number of excellent references on written testing,[18] this important subject will not be discussed further.

Performance Testing. Many occupational competences involve manipulative skills and physical dexterity that are necessary for the satisfactory performance of a job. Among these skills are "trouble shooting" and making adjustments and repairs; operating equipment and machinery; using measuring instruments; and observing safe operating procedures. Work samples or performance tests are likely to have a high degree of validity for measuring many of the skills that cannot be measured by paper-and-pencil examinations. These tests often utilize the ac-

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[17] See Richard Reilly, et al., *Expert Assessment of Experiential Learning–A CAEL Handbook*, for a more thorough discussion of interviewing and oral testing.

[18] See R. L. Ebel, *Measuring Educational Achievement*; N. M. Sanders, *Classroom Questions: What Kinds?*; A. G. Wesman, "Writing the Test Item," in R. L. Thorndike (Ed.), *Educational Measurement*; D. A. Wood, *Test Construction: Development and Interpretation of Achievement Tests*.

tual equipment used on the job, or if such equipment is hazardous, simulators are used. Performance tests are less efficient and more costly to administer than written examinations because they often require one examiner per examinee, special testing equipment, observing and recording hardware, and a relatively long testing time.

How can performance tests be developed? The tasks selected for performance tests should be based on performance objectives derived from the job and task analysis. The appropriate testing conditions, including tools, equipment, and materials required for the specified tasks, must be provided. Detailed instructions regarding what is to be done and the basis for evaluating performance must be given to the examinee. Special instructions and forms must be developed for the test administrator so that he or she can record and evaluate the performance. At least two useful guides for planning, developing, administering, and scoring performance examinations have been written.[19] Appendices D and I present examples of performance tests in the fields of Data Processing and Secretarial Science.

Since it is often expensive and time-consuming to develop performance tests for just a few examinees, consideration may be given to the use of standardized occupational competence examinations. Standardized examinations that can be used for the evaluation of occupational competence of candidates to higher education are those of the National Occupational Competency Testing Institute (NOCTI).[20] The Institute administers written and performance examinations in 24 major occupations covering the following 13 areas of industry: aircraft, automotive, building, drafting, electrical, electronic, food, graphic arts, machine, metal, service, technology, and wood. The tests, administered twice a year at centers throughout the nation, serve one or more of the following purposes:

1. to determine whether applicants for vocational teacher training programs are competent at acceptable levels in the trades they wish to teach;
2. to provide college credit for work experience; and
3. to serve as a basis for certifying vocational education teachers.

The unusual aspect of the NOCTI testing program is the performance tests by which experienced candidates can demonstrate their skills in performing tasks typical of the occupation. The carpentry test, for example, requires that the examinee construct a miniature "house" including floor, walls, roof, and exterior finish.

In addition to the NOCTI examinations, there are a large number of standardized occupational achievement tests available from various publishers. A directory of achievement tests for occupational education by Boyd and Shimberg[21] provides brief descriptions of approximately 150 tests available for evaluating achievement in vocational subjects including automotive, building and machine trades, drafting, printing and graphic arts, electronics, and health and office occupations.

Performance Rating. In certain occupations, such as Law Enforcement and So-

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[19]Joseph L. Boyd and Benjamin Shimberg, *Handbook of Performance Testing: A Practical Guide for Test Makers*; and Adolf Panitz and Thomas C. Olivo, *Handbook for Developing and Administering Occupational Competency Testing*.

[20]National Occupational Competency Testing Institute, *Bulletin of Information for Candidates*.

[21]Joseph L. Boyd and Benjamin Shimberg, *Directory of Achievement Tests for Occupational Education*.

cial Work, the attitude of the individual may be as important as, or even more important than his cognitive and manipulative abilities. Consequently, written, oral, and performance examinations may be of limited value in measuring the attitudes, values, interpersonal skills, and other noncognitive competences necessary for success on the job. One way to measure these competences indirectly is by obtaining judgments of the student's actual performance on the job.

The rating process is a systematic evaluation of a worker by his or her supervisor or by some other qualified person who is familiar with the worker's performance on the job. Ratings are generally employed in situations where it is difficult to obtain more objective measures of an individual's competence.

Methods of rating job performance can be classified into the ranking, rating scale, and checklist procedures. In the ranking procedure, the rater ranks or orders the individuals in a given group from best to poorest on a specific dimension of behavior. The rating-scale methods provide a scale for estimating levels of performance, either in discrete categories or in a graphic or continuous form. Appendix J presents a typical rating scale used in sponsored work-study programs for assessing a student's job performance. This type of a rating form is generally poor, and the factors used on the rating scale (e.g., quantity of work, interest in job, and relations with supervisors) are extremely vague. The three levels of each factor that the employer can check are ambiguous and are not likely to provide an accurate indication of the student's competence level.

The checklist methods of rating have the potential for yielding accurate judgments because they provide the rater with a list of prescaled descriptions of behavior. The rater checks the items that best describe the student being rated. Appendix G presents a rating scale with prescaled descriptions of performance of policemen. The dimensions on this scale were determined through a factor analytic procedure. The scale value of each statement was obtained by administration of the behavioral descriptions to a group of 50 police superiors, who rated each description on the degree to which it represents good or poor performance by their subordinates.

A rating form having from 5 to 15 scales (each assessing a different dimension) is probably suitable for many purposes. Each scale point should have an explicit behavioral description attached to it. Since most raters do not have the capacity to discriminate among too many levels along a scale, it would be counterproductive to include more than seven points on a scale.

The following is an example of a behaviorally-anchored five-point scale for rating a social worker's "ability to get along with colleagues and others in a working situation."

Scale Point	Behavioral Description
5	Consistently productive relationships with professional and other coworkers; deals with conflict helpfully, stimulates others to work cooperatively in the interest of service to clients.
4	Good working relationships, contributes to cooperative work in most situations and occasionally in problematic situations.
3	Working relationships fairly smooth. Does not arouse antagonism or impede cooperative work, but does not actively contribute to cooperation in problematic situations.

2 Occasionally arouses antagonism or creates needless conflict; this does not always have serious consequences, but it does not contribute to effective service.

1 Generally tends to impede cooperative work. Antagonizes others, creates conflict, which adversely affects service to clients.

These descriptions are specific enough to enable the evaluator to determine where the ratee stands on this particular dimension of job performance.[22]

Establish Standards

The assessment of work experience is not concluded when the measurement results are obtained. The measurement results place the student on a qualitative continuum (e.g., poor to excellent) or on a quantitative continuum (e.g., 0 to 100), but they do not indicate which point along the continuum represents an acceptable level of performance that merits college credit. Thus, a standard, or a definition of an acceptable level of performance, must be established to guide the decision on the kind and amount of credit to be granted to the student.

The notion of standards is a controversial issue in experiential learning about which there is much confusion. Often this concept is referred to as "consistency," which it is not (consistency refers to reliability of measurement results). A standard is anything taken by general consent as a basis for comparison. Thus, a student falling below a general standard in reading would be generally regarded as a poor reader. The point of confusion is that the establishment of standards is often not separated from the measurement process. The measurement process involves gathering relevant data about a student. The establishment of standards is essentially the development of guidelines, either before or after the data are collected, regarding how the data will be evaluated. The development and application of standards, however, could never be a completely objective process. Students have unique needs, prior experiences, and objectives, all of which must be considered on an individual basis. This does not mean that standards are vague and inconsistent, but rather that the criteria on which the standards are based must be spelled out in sufficient detail to allow both the student and the institution to be clear about learning expectations.

There are two basic approaches to the development of standards: the norm-referenced and the criterion-referenced. The norm-referenced is the more traditional method that involves a comparison of the learning of the student with that of a well-defined norms group. The performance of a group on a specific measure defines the standard, whereas the performance of the student on the same measure determines whether he is above or below the standard. The norm-referenced approach can be used to establish standards for occupational competence. It will be recalled that the Work Assessment Model proposes to relate and determine the equivalency of experientially-learned competences to courses in the occupational curriculum. If valid measures of course outcomes are available, such as end-of-course achievement examinations, then the standard for the competences taught

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[22]For a more thorough discussion of how to develop and apply methods of measuring occupational competence, see Joan Knapp and Amiel Sharon, *A Compendium of Assessment Techniques*. This paper describes the development and use of performance tests, simulations, assessment centers, essay and objective examinations, interviews, self-assessment, ratings, and product assessment. It also provides references to other relevant sources.

in the course could be based on the performance of graduates of the course. "Experiential" students who can score as well as the average course graduate with a passing grade can be exempted from the course and awarded credit for it.

One example of the norm-referenced approach in establishing standards for the purpose of granting credit is the use of the Subject Examinations of the College-Level Examination Program (CLEP).[23] These examinations, which cover material taught in a large variety of academic courses, are routinely administered to students completing courses corresponding to the examinations for the purpose of developing norms. By determining students' grades in these courses, it is possible to develop a distribution of test scores for each grade level if a significantly positive relationship is found between test scores and grades. The standard is established by analyzing the score-grade distributions and arriving at a logical cutoff score. For example, some colleges may establish a minimum passing score equivalent to that attained by the average student who received a grade of C. Other colleges may specify the standards at a level of an average student who received a grade of C or better, B, or B or better. Each of these grade levels can probably be rationally defended. The importance of this procedure is not that a specific level is selected, but that it is a rational way by which the college can establish and explain its standards.

The norm-referenced approach to setting standards is inappropriate when the assessment techniques used make it impractical to measure the occupational competence of a relatively large number of traditional students. Written objective examinations are relatively easy and inexpensive to administer, but they may not be the most appropriate instruments in many occupational fields. Measurement techniques such as interviews, oral tests, performance tests, simulations, and ratings of products are fairly difficult to administer to a sample of students large enough to establish satisfactory norms.

Sometimes both the institution and the student will agree that competences not taught in the curriculum are relevant to the student's educational goal and should be translated into some form of college credit. Since it will not be possible to develop norms in such a situation, consideration should be given to the criterion-referenced approach in setting the standards. Essentially criterion-referencing involves the use of expert judgment as to what constitutes satisfactory performance. It involves specifying in absolute terms what a student must know or what he must be able to do in order to demonstrate competence in a particular subject.

Committees consisting of faculty members and external experts may often be the ideal kind of group to bring their collective judgment to bear regarding the quality and level of the student's learning in off-campus settings that would merit credit. Such committees would set down guidelines and specific criteria for evaluating measurement results prior to assessing any students. The committees could also interview the student regarding his past experiences and educational goals, review his portfolio and the results of measures of occupational competence, and make a collective determination as to whether the student's competences are at a level that merits college credit.[24]

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[23]College Entrance Examination Board, *CLEP Scores: Interpretation and Use*.

[24]For a more comprehensive discussion of the use of expert judgment see Joan Knapp, *Assessing Prior Learning–A CAEL Handbook*; and Richard Reilly, et al., *Expert Assessment of Experiential Learning–A CAEL Handbook*.

Award Credit

The credit hour is the nationally accepted negotiable currency in higher education. Whether or not a student receives a degree will often be determined by the number of credits he has rather than by the level of his knowledge and skills. In traditional academic programs the credit hour is based on the number of hours that the student spends in the classroom. The credit awarded in traditional work-study programs and internships is based on the amount of time spent in a practical work situation rather than on the actual learning that has taken place. One of the major purposes of assessing work experience is, therefore, to award credit for college-equivalent knowledge on the basis of proficiency rather than on the amount of time spent in the classroom or on the job.

There is a good deal of variation in the amount of credit that institutions grant for experiential learning. The CAEL survey of 266 colleges and universities indicates that, among those institutions which do award credit for prior learning, most award ten credit hours or less on the average.[25] Fourteen percent, however, award an average of more than thirty hours of credit per student. On the other hand, students earn only about 6 to 8 credits in sponsored programs.

Since the Work Assessment Model is essentially a procedure by which the learning outcomes of work experience can be translated to the outcomes of courses within the postsecondary occupational curriculum, the credit earned by the student should be equivalent to that of the courses whose outcomes the student has achieved elsewhere. If a basic electronics course is worth three credit hours, then any student who can demonstrate that he has mastered the content of the course should be awarded three degree-related credits if the course is relevant to his educational goals.

Although this crediting procedure is straightforward and simple, it does not directly respond to a number of conceptual and procedural questions that are likely to be raised in the crediting process.

Should credit be granted for occupational competence only in the student's major field of study or only if it is relevant to the student's learning goal? For example, should an experienced auto mechanic be given credit for his mechanical skills if he is majoring in an unrelated field, such as accounting? The student should probably not receive any "degree-related" credit or credit that reduces the number of courses that must be taken in a major, but it might still be possible to grant the student "elective" credit, depending on institutional policy. Also, in certain cases it is possible for work experience to be considered for "general education" credit. For example, students who worked as writers or newspaper reporters may, after demonstrating their competence, be given credit equivalent to the required English courses. It will be recalled, however, that the Work Assessment Model deals only with degree-related competences. Skills not relevant to the student's educational goal and the curriculum would not be ordinarily measured, evaluated, or credited within the framework of the model.

A more difficult question arises regarding the crediting of degree-related skills not taught within the curriculum. Many workers learn specialized and advanced job skills that are not taught in a college's occupational program. For example, a veteran of the Air Force who worked as a guided missile technician may want to

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[25] See W. Willingham, R. Burns, and T. Donlon, *Current Practices in the Assessment of Experiential Learning*, pp. 51–59.

major in electronics technology. Although much of his knowledge is likely to parallel the curriculum, his knowledge of guided missile technology would not. Such cases as this raise a number of procedural questions regarding crediting. Who will conduct the assessment if the faculty does not have the necessary expertise in certain highly specialized fields? How much and what kind of credit will be awarded? How will the credit be shown on the transcript? How can a college assure that the student receives a sufficient liberal arts experience even though a large number of credits have been granted to him or her? Each institution awarding credit for work experience will have to raise these questions and answer them according to its own policies, faculty expertise, and the kinds of work experiences which students present to the college.

The seven stages or steps of the Work Assessment Model, described here in some detail, are not immutable. A college may easily adapt the model to its unique situation by skipping, adding, or changing some of the steps. Examples of how the suggested procedures might be applied to specific situations are given in the next section.

ILLUSTRATIONS OF THE USE OF THE MODEL

Questions and Answers

In order to highlight its essential characteristics and to clarify the nature of the assessment procedure proposed here, a series of questions and answers are presented. The questions are those that might be typically asked by college faculty members and administrators responsible for implementing and conducting assessment of experiential learning.

Question: How can my college identify occupational competences of students with work experience who are applying for credit?

Answer: Make a complete inventory of students' past work experiences and accomplishments. The inventory could be prepared by a student through a portfolio process, or the student could fill out a task inventory checklist as suggested by the Work Assessment Model.

Question: Several persons with experience in retail marketing recently applied for credit at our college. How can we develop a task inventory checklist in this field?

Answer: The faculty who teach retail marketing should be given the responsibility for developing the checklist. They can consult existing inventories, if any, or draw upon their own knowledge of the field in developing the task inventory checklist.

Question: One of our students claims to have had extensive experience as a stockbroker. Is this experience creditable?

Answer: This experience could be considered creditable if (a) it can be verified, (b) it can be related to the student's educational goal, (c) the student can demonstrate learning, and (d) the faculty judge that the experience results in college-level learning.

Question: How can I verify the claim of a student that he has had work experience as a computer programmer for five years?

Answer: Check with his work supervisor.

Question: Students in our cooperative education program are awarded 3 credits if their job attendance is regular and they submit a final report on their experience. Is our crediting procedure valid?

Answer: Not unless you obtain evidence of the students' learning or accomplishment.

Question: I gave a former day care teacher an oral test in developmental psychology consisting of 20 questions. She was able to answer 10 questions correctly. Should I award her credit equivalent to the developmental psychology course that I am teaching?

Answer: Only if her level of performance is similar to that of students who are passing your course.

Example of How to Assess a Student

Jim Walton, a 36-year old student at Drysdale County Community College, desires academic credit for experience in the field of Data Processing. For the past 18 years Jim worked for various companies as a computer operator, programmer, systems analyst, and programming supervisor. He completed several technical and managerial courses offered by the companies for which he has worked. His current goal is to obtain an Associate degree in Data Processing.

Jim is first referred to a central office on the campus which coordinates the assessment of experiential learning. After discussing his goals with a counselor at this office Jim is asked to complete the work experience checklist in Data Processing. He fills out the checklist and submits it to the chairman of the Data Processing department for review. The Chairman notes that Jim checked many tasks under the major categories of: Operating data processing equipment, computer programming, systems analysis and design, and data processing management.

The Chairman decides that a sufficient number of tasks were checked by Jim to merit further consideration for credit, and he, therefore, decides to interview Jim in order to amplify and clarify the nature of his work experience. The Chairman uses the checklist during the interview by asking Jim about specific items checked. He verifies some of Jim's experiences by examining several certificates presented by Jim that indicate that he has successfully completed in-house company courses in Data Processing.

One major purpose of the interview is to clarify and plan Jim's educational goal and to find the best way to achieve this goal. By planning a program with Jim, the Chairman is able to determine the courses in the curriculum which Jim is likely to have mastered. Since Jim appears to have acquired knowledge equivalent to the Introductory Data Processing and Introductory COBOL courses, the chairman refers him to the faculty members teaching these courses for further assessment.

Jim is first interviewed by the instructor of the Introductory Data Processing course. In order to verify his impressions that Jim has mastered the content of the course, the instructor administers to Jim the comprehensive exit test used in the course. Since Jim scores as well as the average "A" student on the examination, the instructor recommends that he be granted the full credit value of the course (three credits).

Jim is also interviewed by the COBOL instructor who employs the interview schedule in Data Processing shown in Appendix C. The instructor asks Jim to solve a life-like programming problem using the COBOL language. Because Jim has not had an opportunity to do programming in recent years, he does not perform well on the problem. The instructor does not recommend that Jim be awarded any credit for this course.

The Data Processing department at the College does not offer any courses in Data Processing Management, and Jim is referred to the Business Department for assessment of his managerial skills. After interviewing Jim, the Chairman of the Department asks Jim to take the College-Level Examination (CLEP) in Business Management. Since Jim attains a score equivalent to the 75th percentile of the students completing the Introduction to Business Management course, the chairman recommends that he be awarded the full credit value of the course (three credits).

It might appear in Jim's case that a total of 6 credits are too few to grant to someone with 18 years of experience. The awarding of credit, as emphasized earlier, should always be based on the learning outcomes of work experience rather than on the experience itself.

Nothing has been said in this example about the cost of assessment either to the student or to the college. Yet financial considerations often play a prominent role in the process. If Jim could not afford the fees charged by the college for assessment, then he may have lost his motivation to attend college. If Drysdale College fell onto financially dire times, then it might be tempted to use inexpensive but untenable assessment procedures in order to reduce costs. The next chapter details some of the cost implications of assessment.

VI. Cost Of Assessment

The cost of assessing work experience according to the procedures of the model described here is a problem of great importance. "Good assessment" from the standpoint of its technical quality and its value to the student is feasible assessment only if it is economically feasible. Even though the model may be conceptually sound and intellectually pleasing, it is not likely to result in sound assessment if insufficient resources are allotted to its operation. Since a substantial amount of time will be required of the college's administrative staff and teaching faculty to make the assessment process a success, some of the following questions will have to be answered. Will the faculty be expected to contribute their time, or will they be paid for it? How will the funds be raised to compensate the faculty? Will the faculty have the time to devote to assessment even if they were paid for it?

It may be useful to provide rough estimates of the amount of time and cost that it might take to accomplish each of the significant stages of the Model. Table 1 presents the relevant figures for each activity in the assessment of prior learning. The amount of time necessary to accomplish each step was estimated and converted to dollar figures. The fixed costs are the nonrecurring, start-up costs for the college-centered activities such as for the development of a task inventory, defining the course outcomes in the curriculum, and the development of measurement instruments and procedures. These costs are incurred only once and do not depend on the number of students assessed. The per student costs are those associated with the assessment of each individual student. These costs are a direct function of how many students apply for credit.

The data in Table 1 can be used to estimate what the total and the actual per student costs would be for assessing a given number of students in an occupational field. Since the fixed costs must be spread over the number of students who are assessed, the actual per student costs must be calculated. Table 2 presents an example of the computations to find the actual per student costs when the number of students is either 50 or 100. It can be seen from this example that as the number of students increases, the per student cost is reduced.

It is ironic that the cost of assessing sponsored learning is higher than that of prior learning, but there is less likely to be a problem in paying for it. The reason for this paradox is that sponsored programs are usually within the credit structure of colleges and universities. They are treated as regular courses for which tuition is paid by the student. The relatively high cost of assessing sponsored learning results from the need for frequent interaction by the student with the faculty, often on a one-to-one basis. The faculty works with the student in defining the objectives of the work experience, in preparing the student for the experience and monitoring the student's progress by frequent contacts with him and his employer. No cost figures for these activities are given here because they are likely to vary greatly from college to college depending on the nature of the sponsored program. Most of the costs specified in Table 1 for prior learning, however, would also apply to sponsored programs. For each occupational field, competences would be identified, and a task inventory and measurement instruments and procedures would be developed. Considerable reduction in the fixed costs of institutional assessment

Table 1
Work Assessment Model: Estimated Cost of Assessment in One Occupational Field

Activity	Time (hours)		Cost[a]	
	Professional	Non-professional	Fixed	Per Student[b]
Identification of competences and development of task inventory	50		$1,250	
Interviewing student	2			$50
Verification of experience	.5	.5		18
Defining behavioral objectives of courses in curriculum	20		500	
Developing or identifying appropriate measurement procedures and establishing standards	100		2,500	
Administering measurement instruments and evaluating results	1	2		45
Transcripting and record keeping	1	3	50	5
Miscellaneous equipment and supplies				5
Total Costs			$3,900	$123

[a]Cost of professional time is computed at $25 per hour and nonprofessional time at $10 per hour.
[b]It is assumed that the average student will be assessed in relation to the learning outcomes of two courses in the occupational curriculum.

Table 2
Example of Computation of Cost of Assessment

Number of students	50	100
Total fixed costs	$3,900	$3,900
Total per student costs	50 × 123 = $6,150	100 × 123 = $12,300
Total cost	3,900 + 6,150 = $10,050	3,900 + 12,300 = $16,200
Actual per student cost	10,050 ÷ 50 = $201	16,200 ÷ 100 = $162

are likely to be achieved by cooperation among institutions in developing task inventories in different occupational fields.

An example of how one college (Delaware County Community College) finances assessment may offer one solution to the cost problem. When a student applies for credit at this college he or she must make a decision regarding how many credits will be sought. The student then registers for a course called "assessment of experiential learning" for one-fourth of the number of credits being sought. That is, for every 4 academic credits, or fraction thereof, sought, the student enrolls in the assessment process for 1 credit and pays the appropriate tuition and fees. For example, if a student is seeking 18 academic credits, he would enroll in the assessment process for 5 credits by paying the tuition and fee that any student would pay for 5 credits. The actual number of credits awarded to the student depends on the results of assessment and may not coincide with the number of credits that a student is seeking. Thus, the cost to the student is directly related to the amount of assessment that takes place rather than to the number of credits granted.[26]

It is difficult to recommend guidelines concerning how the funds necessary for assessment are to be raised. Certainly the student who is being assessed should pay at least part of the costs. This will discourage the less serious credit seekers and make the assessment process more equitable. But should the students being evaluated bear all of the costs? If this is done, there is a danger that lack of funds may discourage many qualified students from seeking assessment. Probably the most equitable procedure might be one in which the student and the college share the assessment costs.

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[26]For a detailed discussion of the Delaware County Community College procedure for financing assessment of experiential learning, see Eugene Kray and Lorraine Hultgren, *Implementing and Financing Portfolio Assessment in a Public Institution.*

VII. Applying And Implementing The Work Assessment Model

The introductory section of this *Handbook* described a feasibility study in which the needs for occupational competence measures were explored in various fields. The findings of this study indicated that the clearest needs for measures to translate work experience into college credit were in the fields of Data Processing, Police Science, and Secretarial Science. There are apparently many individuals without degrees in these occupations who have acquired job proficiency and who are likely to desire to pursue higher education and receive credit for their experience. Thus, an attempt is made here to apply the Work Assessment Model to three different kinds of occupations: a technical occupation, a service occupation, and an office occupation. It should be emphasized that the application of the model focuses here only on the unique job-related knowledge and skill acquired in each of these occupations. The more generalized skills, such as interpersonal skills, are treated in other CAEL publications.[27]

DATA PROCESSING

Since the data processing needs of the nation have increased markedly in the past decade, the work force in this field has grown to over 750,000. The strong demand for data processing workers is expected to continue during the next decade. Approximately one-third of the workers in the field hold jobs as programmers and systems analysts, and the rest of the work force consists mainly of console, auxiliary equipment, and keypunch operators.

Education and Training

Most careers in Data Processing require some specialized training. The training varies widely in length and content for workers in different jobs. A college degree is becoming increasingly important for programmers and systems analysts, especially those who work in scientifically or technically oriented systems. A strong emphasis on on-the-job training in the field applies both to operating personnel without degrees and to personnel with college degrees. Thus, college graduates in computer science may spend a year or more working with a computer system in order to learn how it functions. Since individuals can enter into the field through diverse routes and since a large proportion of current and future Data Processing workers will not have college degrees, many are likely to seek opportunities for continuing formal education. Community colleges and other postsecondary institutions now need and will continue to need a means of determining the occupational proficiency of experienced Data Processing workers who desire to convert their work experience to degree credit and advanced standing.

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[27] See, for example, Paul Breen, Thomas F. Donlon, and Urban Whitaker, *Teaching and Assessing Interpersonal Competence–A CAEL Handbook*.

Identification of Competences

The Work Assessment Model was applied to the Data Processing field by first identifying the competences acquired in the field and then listing them in terms of explicit task descriptions. This was accomplished by using published job and task analyses and by consulting current practitioners in the field.[28] The compendium of competences developed, which includes some 330 task statements, is organized into the following categories:

1. Operating Data Processing Equipment
2. Computer Programming
3. Systems Analysis and Design
4. Data Processing Management
5. Training
6. Process Scheduling and Control

The compendium of tasks (tasks inventory) is presented in Appendix A and is part of the Work Experience Checklist in Data Processing. The Checklist is designed to encourage students seeking credit in the field to describe their job experiences in Data Processing in great detail. The first few pages of the Checklist provide information concerning the student's educational background and certain aspects of relevant work experience. The major part of the Checklist, however, is the task inventory. The student is asked to indicate whether he or she has performed each of the tasks listed and the relative amount of time that was spent on each. This information would be the basis for the initial discussion between the student and the college staff.

The compendium of competences presented in Appendix A is an attempt to describe in a precise and detailed manner all of the activities performed in the Data Processing field—from those conducted by the console operator to those performed by the Data Processing manager. Some of these tasks are important, others are not. In certain cases it may be more desirable to obtain a sharper focus on the tasks by selecting only important tasks and only those within a particular job in the field. This approach was used to develop another compendium, one consisting of important competences of the job of Business Programming. This job was selected because it is the one most likely to involve the largest number of students with on-the-job learning that is equivalent to formal course outcomes.

The task descriptions for Business Programming, presented in Appendix B are structured somewhat differently from those in the Work Experience Checklist.[29] They are based on a recent survey of practicing computer programmers. A group of 248 practitioners rated the importance of 108 programming skills and techniques. The tasks included in the compendium were those that were viewed as having been important to programmers in the job market during the first three years of job experience.

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[28]The two major source documents used to develop the task descriptions were: Raymond Berger, *Computer Programmer Job Analysis*, and Occupational Survey Branch, *United States Air Force Job Inventory, Computer Systems Career Ladders*.

[29]Berger, *Computer Programmer Job Analysis*, pp. 35–39.

Curriculum Structure and Instructional Objectives

In collegiate Data Processing programs, as in most technical and scientific curricula, a hierarchical sequence of courses makes up the curriculum. (See Table 3 for an example of a two-year computer science curriculum leading to an Associate of Arts degree.) The introductory courses are the prerequisites of the more advanced courses in the sequence.

Table 3
Computer Science Curriculum
Middlesex County College

	Lecture	Laboratory	Credit
SEMESTER I			
English I	3	0	3
Health	1	1	1
Phy-Ed Elective	0	2	1
Math Elective	3	0	3
Data Processing	3	3	4
Intro to Computer Science	2	3	4
Semester Totals	12	9	16
SEMESTER II			
English II	3	0	3
Phy-Ed Elective	0	2	1
Math Elective	3	0	3
Data Structures	3	3	4
Intro to COBOL	2	3	3
Assembly Lang. I	2	3	3
Semester Totals	13	11	17
SEMESTER III			
Social Science Elective	3	0	3
Free Elective	3	0	3
Assembly Lang. II	2	3	3
Adv. A. N. S. COBOL	2	2	3
Management Information Systems	2	2	3
Semester Totals	12	7	15
SEMESTER IV			
Social Science Elective	3	0	3
Free Elective	3	0	3
Operating Systems	3	0	3
Student Design Project	2	3	3
Adv. Programming Techniques	2	3	3
Job Control Lang. Laboratory	0	3	1
Semester Totals	13	9	16

Once the competences in the field are mapped out, it is necessary to describe the occupational courses in terms of the competences that the students are expected to gain in a particular course. This is accomplished by developing instructional objectives for the course. Below is an example of objectives for an advanced ANS COBOL course at Middlesex County College.

A student passing this course should be able to:

1. Create a sequential tape file.
2. Maintain a sequential tape file.
   a. Add a record.
   b. Delete a record.
   c. Change the details of a record.
3. Create a direct access storage device file.
4. Maintain a direct access storage device file.
5. Correct errors in COBOL programs using assembly language listings.
6. Correct errors in COBOL programs using core dumps.
7. Detect and correct logical errors in COBOL programs using TRACE, ON, and EXHIBIT commands.
8. Design test data that will effectively test a program for logical errors.
9. Write efficient programs utilizing decision tables.
10. Write programs to sort files efficiently.
11. Demonstrate effective use of the report writing features of COBOL.

Based upon the foregoing instructional objectives, it would be possible for the instructor teaching the Advanced ANS COBOL course to indicate which tasks, in the inventories presented in the Appendix, are included in the objectives of the course.

Relating Competences to the Student's Objectives and to the Curriculum Objectives

When the student requests credit for work experience in Data Processing, he or she would first be asked to complete the Work Experience Checklist. This Checklist would form the basis for the initial interview between the student and the department chairman (or some other faculty member responsible for the assessment of work experience). The chairman would look over the Checklist prior to the interview in order to be able to form the questions necessary to further clarify the nature and extent of the applicant's work experience. During this initial interview, the chairman might request the student to submit verification of the work experience, such as a letter from previous employers or a certificate.[30] (The job experiences can also be verified by contacting previous employers by telephone or letter.) The initial interview should also be used to discuss the student's career goals and to plan his or her course sequence in terms of those goals. For example, it would be helpful to find out whether the student wants to be a business programmer, a scientific programmer, or a system analyst. Once the sequence of courses that the student must take is determined, then the chairman is in a better position to know whether the student's verified work experience is pertinent to the curriculum. The relevance of the experiences will emerge by a comparison of the competences described by the student with those that are isolated from the defined course outcomes. This would essentially involve a comparison of the specific tasks performed by the student fairly frequently with the tasks that constitute the

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[30]The Certificate in Data Processing (CDP), for example, is based on five years of relevant job experience and passing of an examination.

objectives of each course. The comparisons would be made with all courses in the Data Processing curriculum for which students can obtain credit.

Measurement of Competence

Once it is established that there is a substantial overlap in competences between work experience and one or more courses, it becomes the chairman's function to determine whether the student's skills are at a sufficiently high level to merit further consideration. For example, if a student has had considerable experience in programming computers with COBOL, the chairman may ask him a series of increasingly difficult and incisive questions (such as those listed in Appendix C) in order to obtain more thorough evaluation of the student's proficiency. If he determines that the student is sufficiently knowledgeable in COBOL programming, or any other aspect of data processing, then the student can be referred for further assessment to an appropriate faculty member or to an assessment committee.

It is the function of the teaching faculty to devise, administer, and evaluate tests and other measurement procedures in order to provide a comprehensive evaluation of the student's skill and knowledge in a particular aspect of the field. If possible, several different assessment techniques should be used. Different kinds of written objective examinations can be employed for assessment. These include standardized examinations, such as the Subject Examination in Computers and Data Processing of the College-Level Examination Program (CLEP), final course examinations, and tailor-made written tests for granting credit. It is also possible to test competence in the field by performance tests that involve writing and testing computer programs, debugging programs, designing particular kinds of a system, and operating computers and computer-related equipment.[31] The student could also be requested to submit for evaluation computer programs or other work that he or she may have developed in his or her previous jobs.

LAW ENFORCEMENT

The 400,000 policemen who work in the nation's cities and towns perform vital security and service functions in their communities. A policeman performs a variety of activities in the course of a day's work. He may investigate a housebreaking, direct traffic at the scene of a fire, give first aid to an accident victim, or testify in court. Some policemen may be assigned to special work such as accident prevention or operation of communication systems, whereas others may work as detectives.

Education and Training

There is a definite trend towards the professionalization of the work force in the Law Enforcement field. Many police departments, especially the larger ones, require that their applicants have a high school education. More and more departments also encourage their members to enroll in college-level police science programs. Many policemen are taking advantage of various incentives being offered to

[31] See Appendix D for a performance test on the operation of a card sorter.

them for enrolling in higher education. The impetus towards formal education is created by financial and promotional incentives, by educational allowances, and by funds available from the federally-sponsored Law Enforcement Education Program (LEEP). As a result, more than 500 junior colleges, four-year colleges, and universities now offer Police Science programs.

Since policemen are often hard-pressed to find time for attending college classes, they are likely to welcome assessment procedures that would generate academic credit. Although there are many postsecondary institutions currently granting credit for work experience in Law-Enforcement, many more are likely to do so if valid and credible procedures are available. Apparently some police science departments grant credit simply on the basis of a number of years of verified experience possessed by the student. Others use written or oral challenge examinations or request that the applicant complete a paper in the area of his or her specialty.

Curriculum Structure

Substantial variation exists in the curricula of Law Enforcement and Police Science programs in different colleges. Although a majority of students who enroll in these curricula are or will be members of local police forces, preparation is also provided for career opportunities in federal or state agencies, correctional work, industrial security, and private investigation. It appears that five courses taught in many curricula offer the best possibilities for granting credit.
The common titles of these courses are:

1. Introduction to law enforcement
2. Criminal and constitutional law
3. Criminal investigation
4. Police operations
5. Police administration

Of these five courses, the outcomes of the first two are more likely to be mastered by a substantial number of policemen than the last three. The introductory course covers material that is taught at most police academies and is common knowledge for experienced police officers. Criminal Law is a subject that receives strong emphasis in most academies, and many policemen are well versed in it. The last three courses on the list are generally more applicable to higher ranking police officers. Detectives would most probably have mastered the outcomes of a Criminal Investigations course, and sergeants, lieutenants, and captains would have learned the material covered in Police Operations and Police Administration.

Identification of Competences

In applying the Work Assessment Model to law enforcement, an inventory of tasks typically performed by policemen was developed first. Appendix E presents a compendium of these job tasks organized into the categories of (1) Police Operations, (2) Criminal Investigation, (3) Criminal and Constitutional Law, (4) Criminal Evidence, (5) Criminal Procedures, and (6) Administration. These categories attempt to parallel the typical curriculum in the field. Although the task inventory is still in draft form, it exemplifies the kinds of statements that can be developed to describe work activity in the Law Enforcement field.

Many of the task statements in the Law Enforcement task inventory (Appendix E) were reviewed by a small sample of colleges to determine how many of these tasks are within the objectives of Police Science curricula. The results of this survey indicated not only that many of the competences learned on police jobs are included in the curricula, but also that curricula of different colleges tend to vary considerably.[32] It would, therefore, appear feasible to employ the task inventory procedure in defining course outcomes.

The assessment sequence in Law Enforcement would be similar to that described for Data Processing. The student who desires credit would complete the Work Experience Checklist (Appendix E) prior to being interviewed by the department chairman. The purpose of the interview will be to clarify and verify the student's work experiences, to relate the experiences to the student's educational goals, and to determine whether the student is sufficiently knowledgeable to sit for examination in one or more areas of Law Enforcement.

Issues in the Measurement of Learning Outcomes

There are a number of issues relating to the measurement of the learning outcomes of work experience that should be pointed out. These issues have been raised by a task force of educators and practitioners in Law Enforcement who were convened for the specific purpose of exploring the needs for occupational competence measures in this field.[33] It was agreed by the task force that competence must be assessed as it takes place on the job and in terms of satisfactory performance of specific predetermined tasks. It was recognized, however, that colleges cannot, and should not, assume responsibility for on-the-job performance. The college can only assess the potential of a former student to perform a job of some sort. The actual performance is influenced by many variables beyond the control of the college—e.g., work environment, job constraints, values and norms of the organization and/or the clients, etc. If a college can only assume responsibility for imparting knowledge that is potentially useful on the job, then it cannot expect a student who wants to be assessed for past experience to be able to exhibit job competence as well as knowledge of the field. Although these two poles (knowledge and performance) are never exhibited in isolation, the task force believed that it is important that an assessment procedure that measures past experience should not be significantly more demanding than an assessment procedure that measures knowledge derived from classroom experience. Given this conflict, it may be well for initial efforts at assessment to focus on knowledge-based, rather than on performance-based criteria, since application of standards in the knowledge area is more uniform than in the performance area. Illustrations of knowledge-based and performance-based measurement in Law Enforcement are given in Appendices F and G, respectively.

In addition to knowledge and performance skills, members of the task force discussed the role that should be played by attitudes and values in the proposed assessment procedure. Apparently some college instructors in Police Science feel

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[32]The results of this survey are reported in William Bergquist, et al., *Exploring the Needs for Competency Measures in Eight Occupational Fields: Position Reports of Task Forces*.

[33]Bergquist, et al., *Exploring the Needs for Competency Measures*.

that attitudes or orientations are among the most important things they are trying to convey to their students. Many faculty members might reject a work assessment model if it failed to convince them that the police officer being tested has embraced and fully incorporated a specific set of attitudes, orientations, and values. Since each faculty member has his or her own ideas about what this set of values should be, it would be difficult to make the crediting of values and attitudes sufficiently objective to be acceptable to higher education institutions.

SECRETARIAL SCIENCE

The secretary is the hub of an organization's communication network. He or she records, stores, and transmits a variety of information to persons within and outside of the organization. His or her duties may range from filing and typing to taking dictation and answering correspondence. There are approximately three million persons, mostly women, in the nation's secretarial work force.

Education and Training

The education and training of secretaries is quite varied. Most employers require a secretary to be a high school graduate, but many prefer secretaries who have had postsecondary secretarial training at a college or private business school. Although a high school program may prepare an individual with the entry-level skills required for a typical secretarial position, college programs in secretarial science provide greater depth and breadth in the competences needed for most positions of responsibility. Table 4 presents a typical two-year curriculum in Secretarial Science leading to an Associate degree.

The secretarial job is an ideal target field for the development and application of mechanisms for the evaluation of work experience. First, the size and the nature of the work force suggests that there are many individuals without degrees who are learning college-relevant knowledge on the job. Employment of secretaries is expected to increase rapidly through the next decade as the continued expansion of business creates a growing volume of paper work. Second, many employers offer incentives for continuing education to secretaries in the form of tuition reimbursement, higher salaries, and promotion. Third, many college secretarial science programs offer internships. This suggests a need to assess students' learning in this type of sponsored experience.

Nature of the Competences

A compendium of tasks in the Secretarial field has been developed by the CAEL staff. It is presented as part of the Work Experience Checklist in Appendix H. The task descriptions have been organized into six major activities: Typewriting, Office Procedures, Record Keeping, Office Machines, Communications, and Supervision. All of these categories, with the exception of Supervision, can be directly related to one or more courses in the typical curriculum.

The questions on the first pages of the Checklist, prior to the listings of task statements, are designed to yield additional information concerning the student's educational and occupational background, specifically with respect to experience with various kinds of equipment and the level of typing and shorthand skills. The

Table 4
Two-Year Curriculum for Executive Secretary
Miami Dade Junior College

FRESHMAN YEAR

FIRST TERM		SECOND TERM	
Course Name	Credit Hours	Course Name	Credit Hours
Orientation	1	Machine Acct. Systems & Procedures	3
Expository Writing	3	Shorthand II	3
Basic Calculator Functions	3	Machine Shorthand II	3
Shorthand I	3	Machine Shorthand Transcription II	1
Machine Shorthand I	3	Social Science	3
Machine Shorthand Transcription I	1	Human Relations	3
Typewriting II	3	Physical Ed. Elective	1
Personal Improvement	2	Business Writing	3
Social Development	1		
	16-17		16-17

SOPHOMORE YEAR

THIRD TERM		FOURTH TERM	
Course Name	Credit Hours	Course Name	Credit Hours
Shorthand III	3	Shorthand IV	3
Typewriting	3	Clerical Record Keeping	3
Secretarial Procedures	3	Theory of Business Information Systems	3
Business Law	3	Secretarial Internship	3
Humanities	3	Social Science	3
Physical Ed. Elective	1		
	16		15

completed Work Experience Checklist is used by the college to document and verify the student's job experiences. The student is then interviewed by the department chairman in order to define educational goals and determine which of the competences possessed by the student are relevant to his or her educational goals and to the curriculum. If the competences of the student overlap or match the behavioral objectives of the courses in the curriculum, then the student's skill level should be assessed.

Students with work experience in the field are most likely to be eilgible to receive credit for typewriting and shorthand. These two skills are probably the ones that receive the most frequent practice on a job, and are also the ones that are covered most extensively in the curriculum. It will be noted in Table 4 that there are three levels of typewriting and four levels of shorthand (excluding machine shorthand). Thus, in addition to granting credit, it would be necessary to determine the most appropriate level in which to place a student.

Measurement of Competence

In comparison to the other two occupations discussed in this *Handbook*, it is relatively easy to develop behavioral objectives and valid competence measures in Secretarial Science. Since many of a secretary's tasks involve verbal communication, it is appropriate to develop work samples and performance tests using the verbal mode. Appendix I presents a sample performance test for assessing ability to compose a business letter. There are also a large number of standardized tests for measurement of proficiency in shorthand, typewriting, record-keeping, machine calculation, and clerical skills. Pertinent information on most of these tests is given in the *Directory of Achievement Tests for Occupational Education.*[34]

Special mention should be made of the Certified Professional Secretary (CPS) Examination Program, sponsored by the National Secretaries Association (International), and its use in granting college credit.[35] The CPS exam is a two-day timed series of six examinations which cover the following six subject areas:

1. Environmental relationships in business
2. Business and public policy
3. Economics of management
4. Financial analysis and the mathematics of business
5. Communications and decision making
6. Office procedures

High school graduation or equivalent, plus a minimum of three years of verified secretarial experience, are the basic qualifications for taking the examinations. Approximately 50 higher education institutions are presently awarding degree credit to secretaries who have successfully completed the examinations. The typical college awards about 30 credits, but there are several colleges which award 45 credits or more.

OTHER OCCUPATIONAL FIELDS

The Work Assessment Model was applied in the previous sections to the Data Processing, Law Enforcement, and Secretarial occupations. These fields were selected on the basis of evidence that there were clear needs to translate work experience into college credit for workers in these three fields. Within any particular institution, however, there are likely to be other fields or subjects that will require the development of occupational competence measures for the evaluation of work experience.

The model and the prototype instruments presented here are designed to serve primarily as examples for the establishment of assessment methods in fields other than those developed here. A college desiring to apply the Work Assessment Model to other occupations should first select an occupation or occupations according to the criteria suggested earlier. The competences acquired in the occupation should be identified and a task inventory developed. The outcomes of each of the courses in the occupational curriculum should be defined in terms of the occupational competences. These task objectives would be, then, used to identify

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[34]Joseph L. Boyd and Benjamin Shimberg, *Directory of Achievement Tests for Occupational Education.*

[35]Information about the Certified Professional Secretary Program may be obtained from the National Secretaries Association, International, 2440 Pershing Road, Suite 610 Crown Center, Kansas City, Missouri 64108.

or develop appropriate occupational competence measures and to establish standards for acceptable performance.

How would a college choose occupational fields for assessment? The model is undoubtedly more relevant to some occupations than to others. Occupations, such as engineering, accounting, and law, that require a baccalaureate degree for entry are inappropriate for the model. Occupations in which nondegreed individuals work and acquire experience are more germane. Examples of such fields are auto mechanics, management, electronics technology, and child care.

The most obvious and important consideration in selecting fields is the nature of the work experiences being presented for credit. The more that students desire to be assessed in one particular field, the more cost effective it becomes to develop formal procedures to assess that field.

SUGGESTIONS FOR IMPLEMENTATION

As with the implementation of any new procedure on the college campus, a number of obstacles will have to be overcome. A college may be tempted to implement an assessment system using the path of least resistance, one in which the cost and effort expended by faculty and administration are minimal. This could be a mistake. Listed below are specific suggestions for implementing and carrying out an assessment program:

1. Involve appropriate faculty in planning and implementation.
2. Don't deny any student the opportunity to be assessed for experiential learning regardless of previous experience or lack of it. Credit should be awarded for the learning outcomes of experience, not for the experience itself.
3. Determine how the cost of assessment will be paid. Formulate the fee to be paid by the student.
4. Arrange to compensate faculty members for time spent to develop assessment instruments and to conduct individualized evaluation.
5. Publicize the assessment program.
6. Have each participating department develop a list of competences for which credit is awarded.
7. Have the student indicate the competences he or she possesses and refer him or her to the appropriate department for assessment.
8. Verify the claims of the student before continuing with assessment.
9. Be sure that the competences being assessed are related to the student's educational goal.
10. Do not assess a student by a casual interview.
11. Train faculty members in the assessment process and encourage them to develop common frames of reference for awarding credit.
12. Measure competence in a subject matter by evaluating different aspects of competence using two or more measurement techniques.
13. Set realistic standards for awarding credit. Standards should not be set so high that few or no students could attain them. Conversely, they should not be so low that everyone who is assessed is necessarily granted credit.
14. Monitor the reliability and validity of assessment by using procedures similar to those described in Chapter VIII of this *Handbook*.

VIII. Evaluation Of The Work Assessment Model

Extensive review, critique, experimental use, and research on the Work Assessment Model during 1975-76 were conducted by CAEL institutions. The results of the review and experimentation provided valuable feedback that made it possible to revise the original Working Paper.

The Work Assessment Model is evaluated here by two different approaches. The first approach is a summary of the critical issues raised in the formal reviews of the paper; the second approach is a description of the results of the field research.

CRITICAL ISSUES

A brief questionnaire was sent to CAEL institutions involved in the assessment of work experience. The questionnaire asked the respondents to identify the strengths and weaknesses of the original Working Paper and to cite specific issues concerning assessment practice or policy that would bear on the revision of the paper.

There were 39 respondents to the questionnaire. Sixty-one percent judged the Working Paper useful. Among the strengths cited by the respondents were (1) organization and format, (2) comprehensiveness, (3) theories, ideas, concepts, and models, and (4) examples. The relative difficulty of the paper and the fact that the suggested procedures may be impractical were cited among the weaknesses.

It should be noted that of the 39 respondents only 2 were from two-year institutions. Since the Work Assessment Model is likely to be more applicable to junior and community colleges than to four-year institutions, the feedback from these reviewers may not be representative of the entire range of institutions to which the model could apply. With this limitation in mind, the major critical issues identified will now be discussed.

1. Specific Versus General Competences. One of the major problems for many programs crediting experiential learning is that they are not based on a clear notion of the particular competences that have been or are to be achieved. A necessary step in the assessment process is to define the ability to perform and apply knowledge in a practical situation.

A competence can be very general, such as "communications skill," or it could be very specific, such as "ability to solve linear algebraic equations with one unknown." The point of view taken in this *Handbook* is that the more specific a competence, the more likely it is to be useful for assessment purposes. The most useful level of specificity is the one that describes concrete behavior. Thus, instead of saying that the student "knows statistics," it is better to say "able to compute means and standard deviations."

A competence is defined in the model as the ability to perform a very specific task in a specific occupational context. A good task statement indicates what the individual is doing, why he or she is doing it, and the context in which the task is being done. Such a statement is likely to provide guidance regarding what is to be assessed and how the assessment is to be carried out. It must be conceded,

however, that there are fields or subjects in which such task statements cannot be developed.

2. The Need to Relate Work Experience to Course Outcomes. People who learn through work experience do not do so in neat little packages called courses. Experiential learning is interdisciplinary, it involves the learning of complex skills as well as simple ones. Why then, is there a need to tie experiential learning to course outcomes?

Higher education today is structured in terms of courses and credits, and an assessment system can be effective and have an impact only if it comes to terms with this reality. Despite many innovations in curriculum structure and modes of learning, the credit hour remains sacrosanct. It is still defined in terms of classroom hours. From the viewpoint of efficiency of instruction, it makes little sense to have a student sit through a course whose content he or she has already mastered.

In sponsored work experience programs there is a deliberate attempt to have the student learn what is not taught in the classroom. Here too, course outcomes need to be related to outcomes of the work experience, and the way that the sponsored work experience supplements and reinforces the classroom learning should be determined. Thus, by defining the learning outcomes of the curriculum and the sponsored work experience, both can be structured to fit with one another.

The question of what kinds of course outcomes should be assessed can be argued. Many faculty members emphasize attitudes, values, approaches, and other noncognitive skills in their teaching. Others emphasize specific knowledge and skill. The Work Assessment Model focuses only on the learning of knowledge and skill. Regardless of what is emphasized in a course, the outcome must be measurable if it is to be useful for the assessment of experiential learning.

3. The Need for the Seven Steps in the Work Assessment Model. Is the Work Assessment Model unnecessarily elaborate? A legitimate question with respect to the model is whether it is possible to measure and evaluate students' knowledge and proficiency directly, bypassing the initial assessment phases of competence identification, verification of experiences, and articulation of competences to the curriculum and to the student's educational goals. There are a number of assessment systems in existence, such as CLEP, which make a direct evaluation of the students' competences without the preliminary steps suggested by the Model. When students apply for credit, for example, they might be administered an examination, and on the basis of the results they may be awarded credit. Why then is it necessary to go through this elaborate model when assessing work experience?

There are a number of answers to this question. First, the student needs help in identifying the competences that he or she may have acquired through work experience. Many students do not know what is college-relevant learning, nor are they able to verbalize what they have learned. Second, since individualized assessment is expensive, a stepwise procedure is likely to be more economically feasible than one which begins with measurement and evaluation. For example, students whose work experience is found to be not relevant to the curriculum would never get to the measurement and evaluation stage of the model. Finally, faculty resistance against awarding credit for experiential learning will tend to diminish with the introduction and use of a formal and logical assessment procedure

that is essentially modeled after what many faculty may actually be doing, but doing less deliberately and systematically.

4. What Is Credit-worthy Experience? The question of what kind of experiential learning should be credited may have as many answers as there are colleges that award credit. One of the important corollary questions, however, is whether experiential learning should be credited if it has no counterpart in the formal curriculum

Since all experience, including work-experience involves some kind of learning, the college must obviously limit the kinds of learnings for which credit will be awarded. Crediting only college-level learning, however, may be easier said than done for it is difficult to define college-level learning. A simple, but not completely satisfactory solution to this problem is to credit only the knowledge and skills that are taught in the curriculum of the college awarding the credit. The advantage of this procedure is that it defines college-level learning precisely and allows the teaching faculty to become involved in the assessment process. Its disadvantage is that it ignores much college-level learning that is not taught at the particular institution.

Many colleges, however, do credit learning not specifically taught on their campuses. For example, a student who speaks Japanese might be given credit in the humanities even though no courses in this language are taught at the college. In this particular case, however, probably someone other than the teaching faculty must evaluate the proficiency of the candidate.

5. Cost of Assessment. The financial realities in higher education today require that the cost of assessment be made as low as possible. Since the assessment of experiential learning must often be individualized, its economic feasibility becomes an important consideration in its implementation.

One of the major cost items in the Work Assessment Model is the development of lists of tasks or competences in an occupation. It takes considerable effort and time to identify all the important activities that are typically conducted within a particular work area. Since each occupational cluster requires a separate list of competences, the cost would be multiplied by as many different occupations as were engaged by the students.

It will probably not be necessary for institutions to "reinvent the wheel" by developing the same lists of competences in different occupations. It may be possible for one institution to develop the competences in one occupation and share its compendium with other institutions. Through cooperative effort a group of institutions working together could minimize the cost to any one college.

Another costly item in the Work Assessment Model is the measurement and evaluation phase. This cost is minimized by the model because measurement and evaluation are among the last steps in the assessment process. The initial steps, which act as screening devices, are relatively inexpensive. Thus, it is possible to determine early in the assessment process whether or not the student participated in creditable work experience and whether or not there is a need for further assessment.

6. Support and Involvement of the Faculty in the Assessment Process. No assessment system, regardless of its validity or intellectual appeal, is likely to

become a reality unless it receives both the support and involvement of the teaching faculty. It is up to the faculty to develop the individual components of the assessment system and to act in the role of evaluators of the students' competence.

There is a natural resistance on the part of many college faculty members to the concept and the practice of assessing experiential learning. In these days of declining enrollments in higher education some faculty members may feel that granting credit for a course that they teach might threaten their job security. The argument against this position is that granting credit for experiential learning can be a powerful incentive for drawing students into a college and thereby raising rather than reducing enrollments.

Possibly the greatest obstacle to faculty involvement is the amount of time it takes to conduct individualized evaluation. If faculty members are expected to contribute their time to this effort, then participation is likely to be minimal. On the other hand, if faculty members could be compensated for their time either directly or by reduced teaching loads, then good support and participation is likely to occur. It must be made clear to the faculty that assessment is an integral part of the teaching process and as teachers it is one of their major functions.

7. Appropriateness of the Norm-referenced Approach for Establishing Standards of Competence. After administering test instruments or other assessment procedures, one is invariably faced with the problem of score interpretation. Does the score resulting from the assessment procedure indicate whether the individual's competence is at a level acceptable for credit? How is this level established?

During the past several years, measurement and instructional specialists have distinguished between two general approaches to score interpretation: norm-referenced and criterion-referenced approaches. The norm-referenced approach is used to identify a student's performance in relation to the performance of others on the same measure. A criterion-referenced test is used to identify an individual's status with respect to an established standard of performance. Although the notion of conducting evaluation in relation to absolute standards is logically appealing, in practice such evaluations seldom occur. The reason for this is that any absolute standard that is established is likely to require judgment at some point and these judgments often involve normative comparisons, either tacitly or explicitly. Thus, because all score interpretations must ultimately be norm-referenced, it is often desirable to make this approach explicit.

Assessment of students who learn in the traditional curriculum is one way to obtain a relevant norm. Without this kind of information it is difficult to determine how good is good. Thus, when evaluating the results of an assessment procedure on experientially trained students, it is a good idea to administer the procedure to a representative sample of students who have completed specific courses in the curriculum.

8. Relevance of the Work Assessment Model to the Liberal Arts Curriculum. The Work Assessment Model is designed primarily to establish equivalency between the learning outcomes of work experience and the learning acquired in college. Thus, the model would be most applicable to occupational and career programs that prepare individuals for jobs. The liberal arts curriculum, however, is oriented toward basic communication and mathematical skills, the humanities, and

the social and natural sciences. Very little, if any, knowledge taught in this curriculum is expected to be acquired through work experience. Thus there is little chance of finding equivalence between the learning outcomes of work and those of the curriculum.

Parts of the model, however, may be relevant to the liberal arts curriculum. Specifically, there is a need for a rigorous definition of the learning outcomes in liberal arts courses. Competences that the student is expected to have at the end of a course or at the end of a curriculum should be identified, if possible, and clearly defined. Such definitions of terminal performances will aid the instructor in planning instructional procedures, assessing student performance at the end of a unit of instruction, and directing the student's attention and effort to specific goals.

RESULTS OF FIELD RESEARCH

During 1975-76 six institutions of higher education participated in centrally-directed empirical studies on the Work Assessment Model. The purpose of these studies was to determine the reliability and validity of assessment of work experience as suggested by the model. The studies were directed and reported by ETS and the data were collected individually by each institution on its own campus.[36]

Three basic questions were to be answered by the field research:

1. Do faculty agree on the amount of credit to be awarded to different students for work experience?
2. To what extent can faculty agree on assigning credit for work experience for courses within a particular occupational program?
3. What is the concurrent validity of the documentation of work experience?

Study 1

In order to be fair and equitable, crediting practices must be consistent. One way of determining the consistency of crediting practices is to find out whether different faculty assessors can agree on the number of credits to be awarded to different students after independently examining the same evidence. The basic purpose of this study was to evaluate the extent to which faculty agreed on the number of credits awarded for prior work experience.

A total of 90 students attending four colleges were the subjects of this study. There were 46 students seeking credit in the field of Law Enforcement, 27 in Secretarial Science, 9 in Data Processing, and 8 in Management.

Each student was assessed independently by two faculty judges who were experts in the subject matter in which the student was seeking credit. The specific method of assessment varied among institutions and occupational fields, but most faculty used a local adaptation of the Work Assessment Model. Based on his or her assessment, each faculty member was requested to assign credit to a student in each of seven predefined content areas within the occupational subject matter. For example, two content categories within Law Enforcement are "Police Operations" and "Criminal Investigations." The total number of credits assigned to a student was the sum of the credits in each of the content categories.

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[36] See Warren W. Willingham and Associates, *The CAEL Validation Report*, Chapter VI, for a full description of the studies.

The results indicate that faculty assessors tended to be consistent with each other in their credit assignments, although there was a wide variation in interrater agreement among departments. Some assessors were very liberal or conservative in awarding credit, but there was substantial agreement among them on which students should be granted more (or less) credit. It is speculated that the training of such assessors can remove much of the remaining disagreement between them.

Study 2

The Work Assessment Model suggests that the evaluation of prior work experience be conducted in the context of the courses in the relevant occupational program. The model assumes that it is possible to identify specific learning outcomes of work experience and to translate them into courses or other units of the curriculum. Thus, the major purpose of this study was to find out the degree to which faculty within an institution can agree on the relevance of different competences to specific content categories within an occupational field.

Instead of assessing actual students in this study, the portfolios of actual students were used. The use of portfolios made it possible to obtain comparable data from different institutions. Five different portfolios in each of the areas of Management, Law Enforcement, and Data Processing were evaluated by two or three faculty raters in each field at six institutions.

The results are inconclusive regarding the extent to which faculty assessors can agree on the assignment of credit to different content categories in a particular subject matter. The number of cases used in these analyses were too few for confident generalization, and the results are conflicting. The findings provide only limited evidence of consistent articulation of occupational competence to subject matter.

The results regarding the question whether faculty tend to agree on the amount of credit awarded to illustrative cases are also conclusive because of the small number of faculty assessors. As in Study 1 there was substantial agreement on which students should be awarded more or less credit, but assessors sometimes differed widely on the general amount of credit to be awarded for a particular experience.

Study 3

A basic element of the Work Assessment Model is the inventory of work competences. In order to be valid, there should be an independent corroboration of the students' statements regarding which activities have been conducted on the job. The purpose of this study was to determine the extent to which students and their work supervisors agree on which specific activities were conducted by the students on the job.

The Task Inventory Checklists in Law Enforcement, Data Processing, and Secretarial Science (presented in the Appendices) were completed by 72 students and their work supervisors. The data were analyzed by computing the frequency and percentage of checklist tasks checked by the student and his or her work supervisor. Since the checklist tasks were grouped into content categories, it was possible to compute the frequency of student and supervisor checks within con-

tent category. Since each checklist contains six sections corresponding to content categories, it was possible to compute six scores for each student and each work supervisor.

The results of this study are that, in general, students indicated that they had performed slightly more tasks than their supervisors indicated. There are, however, some significant differences among different departments with respect to whether students or supervisors check more tasks. Specifically, of the 10 departments (institution-field combinations) involved in this study, in 5 departments the supervisors checked more tasks than did the students.

Another evaluation of the degree of agreement between students and their supervisors is by the number of tasks checked by the student which were also checked by his or her supervisor. In all fields, a substantial proportion of the tasks checked by students were verified by supervisors. The results strongly suggested that students' work supervisors corroborated students' claims regarding activities on the job. There is good reason to believe that task inventory checklists by which the student describes his or her work experiences yield accurate and authentic information.

CONCLUSION

If the assessment system described in this *Handbook* is viewed as one which is applicable primarily to crediting of experiential learning in career and occupational programs, then it appears to have much utility. The majority of the reviewers of the original Working Paper found it to be useful. The field research indicates that assessment of occupational competences, as suggested here, can yield reliable and valid results.

To be sure, the Work Assessment Model is no panacea for all problems of assessment. The model concentrates on only one arena (albeit an important one) of experiential learning and proposes a fairly specialized technique of dealing with it. Although the model can be followed exactly as presented here, it can also be easily adapted to an existing assessment program.

The assessment of experiential learning is a relatively new endeavor in higher education. Its success at a particular institution will depend, in large part, on the extent to which faculty are involved and trained in assessment and the reliability and validity of the procedures used. It is hoped that this *Handbook* will contribute to this undertaking.

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APPENDIX A.
WORK EXPERIENCE CHECKLIST IN DATA PROCESSING

Instructions to the Student:

The purpose of this questionnaire is to help you to describe in a systematic manner your work experiences in the field of data processing. The information that you provide on the skills and knowledges that you acquired in previous work situations will be useful in integrating your occupational learning experiences with your specific educational goals. By indicating whether you have had experience in performing various specific job tasks, you and your faculty advisor will be in a better position to decide whether your experience should be considered for academic credit and to determine the kind of additional instruction that you will need in order to satisfy the requirements of your major field.

Complete this checklist if you have had job experience in one or more of the positions listed below or in other positions in the data processing field. Check all the positions in which you have had experience:

_____ Computer programmer
_____ Systems analyst
_____ Manager or director of data processing staff
_____ Operator (e.g., computer console, keypunch, tabulating machine, optical scanner, microfilm device, off-line printer)
_____ Auxiliary positions (e.g., production control analyst, data librarian, computer output processor)
_____ Other (Please specify) _____

I. Identification Information

1. Your Name _____
   Last First Middle Initial
2. Address _____
   Street
   _____
   City State Zip
3. Social Security Number _____
4. Sex _____ Male _____ Female
5. Age _____

II. Educational History

1. What kinds of courses in data processing have you taken?

   _____ high school courses
   _____ college courses taken for credit
   _____ noncredit college courses or seminars
   _____ correspondence courses
   _____ training courses or seminars conducted by a professional group or society (e.g., ACM, DPMA)
   _____ training courses or seminars conducted by computer manufacturers, industry, or consultant bureaus
   _____ training courses or seminars conducted by the military
   _____ other (Please specify) _____

2. What is the highest grade (or level) of formal education which you have completed?

   _____ 8th grade or less

_____ some high school
_____ high school graduate (or GED diploma)
_____ some college
_____ college graduate

3. Are you presently enrolled in college?
   _____ Yes (Please give name and address)
   _____ No (Skip to Question 7)
   Name and Address of College
   _____
   _____

4. Indicate your college status below:
   _____ Full-time
   _____ Part-time (Days)
   _____ Part-time (Evenings/Weekends)
   _____ Other (Please specify) _____

5. Class in college
   _____ Freshman
   _____ Sophomore
   _____ Junior
   _____ Senior
   _____ Other (Please specify) _____

6. What is your major field? _____

7. Have you ever participated in a high school-sponsored work-study program in data processing?
   _____ Yes
   _____ No

8. Have you ever participated in a college-sponsored work-study program in data processing?
   _____ Yes
   _____ No

III. Employment History in Data Processing

1. List below the positions you held in the Data Processing field. Indicate your *MOST RECENT JOB FIRST.*

Job Title	Type of Industry (e.g., insurance, education, banking, manufacturing)	Length of Employment Yrs. Months	Enter the name and title of your supervisor and the company name and address.

2. Which of the following equipment can you operate?

_____ Collator
_____ Interpreter
_____ Keypunch
_____ Verifier
_____ Reproducer
_____ Sorter
_____ Statistical accounting machine (e.g., IBM 101)
_____ Tabulator

_____ Other (Please specify) _____

3. List below all computers that you have operated.

Example

Manufacturer, Model, and Operating System	Learned In School	Length of Full-Time Work Experience	
		Years	Months
IBM 360/65, OS-MVT	Yes	4	2

4. Please indicate your programming experience below.

Example

Language	Computer Manufacturer, Model, and System	Number of Programs Written	Average No. of Source Statements	Max. No. of Source Statements	Length of Full-Time Work Experience	
					Years	Months
COBOL	IBM 360/65, OS-MVT, HASP	40-45	600	2500	3	2

5. Indicate the nature of your programming assignments by checking all appropriate items below.

_____ Commercial Applications
_____ Scientific Applications
_____ Computer Systems Applications (In support of Commercial and/or Scientific Applications)

IV. Task Inventory Checklist

Listed on the following pages are specific tasks which are typically conducted by data processing personnel. The task descriptions are organized into six major activities or functions: operating data processing equipment, computer programming, systems analysis and design, data processing management training and process scheduling and control. Read each task description and indicate with a check (✓) whether you performed the task in your previous work. If the task was performed by you, then indicate the relative time which you spent on the task by using the code numbers given in the box. If you had more than one previous job in which a different amount of time was spent on a task, then use a code number that will represent the average time spent on that particular task in all jobs. Do not be concerned that you have not accomplished many of the tasks listed as no student is expected to have performed all, or even most, of the tasks.

EACH STEP SHOULD BE PERFORMED FOR THE FULL LIST OF TASKS BEFORE PROCEEDING TO NEXT NUMBERED STEP

STEP 1
DESCRIBE YOUR PREVIOUS JOBS BY CHECKING (✓) THOSE TASKS WHICH YOU PERFORMED.

STEP 2
INDICATE RELATIVE TIME ON EACH TASK IN PREVIOUS JOBS. ONLY ENTER TIME FOR TASKS YOU CHECKED IN STEP 1. USE NUMBER CODE 1-5 AS BELOW. (TIME DOES NOT NECESSARILY EQUAL IMPORTANCE)

1. VERY MUCH BELOW AVERAGE TIME ON THIS TASK.
2. BELOW AVERAGE TIME.
3. AVERAGE TIME.
4. ABOVE AVERAGE TIME.
5. VERY MUCH ABOVE AVERAGE TIME ON THIS TASK.

Example:

	STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE
1. Maintain inventory of various data processing supplies	✓	3
2. Operate time sharing system terminal		
3. Generate program control counts and messages needed to monitor routine program usage	✓	1
4. Code program that updates a sequential master file	✓	2
5. Design system using data inscription device		

A. OPERATING DATA PROCESSING EQUIPMENT

STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE

1. Maintain inventory of various data processing supplies
2. Maintain machine utilization records or logs
3. Maintain technical files and manuals that pertain to equipment operation
4. Clean equipment
5. Review products (such as printed reports, card decks, etc.) for obvious errors, and initiate corrective action
6. Adjust sequence of jobs and job processing steps to make the most effective use of your available machine time
7. Analyze results to determine proper recovery procedure following detection of an error
8. Respond to messages generated by the equipment
9. Respond to signals displayed (lights, switches, etc.) by equipment
10. Rewire plug boards
11. Determine the cause of abnormal machine stops
12. Make machine switch settings to achieve desired results
13. Remove card jams
14. Operate 3 or more unit record devices such as sorter, interpreter, reproducer, etc.
15. Wire plug boards for 2 or more unit record devices such as interpreter, reproducer, collator, etc.
16. Operate card reader
17. Operate card punch
18. Operate office copying machine, such as Xerox, 3M, etc.
19. Operate forms processing machines such as burster, decollator, etc.
20. Operate magnetic tape cleaner
21. Operate microfiche/microfilm machine
22. Operate paper tape reader or punch
23. Operate remote inquiry unit
24. Operate remote job entry unit
25. Operate time-sharing system terminal

A. OPERATING DATA PROCESSING EQUIPMENT (cont'd)

	STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE
26. Operate keypunch		
27. Operate key inscription device		
28. Operate key verification device		
29. Operate off-line printer		
30. Operate optical scanning device		
31. Operate micro processor		
32. Operate minicomputer		
33. Operate computer console		
34. Review processing steps prior to submitting job to computer		
35. Prepare, maintain, and load computer control card decks		
36. Perform daily start-up procedures to prepare computer for use		
37. Perform program assembly and/or compilation		
38. Update systems programs such as object run tapes, object disk libraries, etc.		
39. Label and file card decks, magnetic tapes, paper tapes, or magnetic disks in data library		
40. Retrieve specific card decks, tapes, or disk packs from data library		
41. Mount disk packs		
42. Mount magnetic tapes		
43. Mount continuous forms in printer		
44. Change printer ribbon		
45. Splice magnetic tape		
46. Splice paper tape		
47. Prepare automatic plotter for operation		
48. Interrogate computer memory locations through use of a console, switch settings, etc.		
49. Initiate a computer memory dump		
50. Prepare control cards for simple data file utilities to perform such operations as tape to print, tape to tape, disk to tape, card to tape, card to print, etc.		

B. COMPUTER PROGRAMMING

Items 51 through 108 are of a general nature and do not represent a particular area of application. Items 109 through 126 are related to a Commercial Programming environment, items 127 through 143 reflect a Scientific Programming environment, and items 144 through 158 assess experience in a Computer Systems (support) Programming environment.

STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE

General Programming

51. Adapt/convert programs to different computer configurations
52. Code programs utilizing more than one language
53. Prepare utility programs such as sort, merge, and tape to print; to meet specific processing requirements
54. Convert detailed program flowcharts or decision tables into programming code
55. Desk check programs for syntax and other coding or keypunch errors
56. Desk check programs for logic errors
57. Correct errors identified by diagnostic messages generated as a result of compilation or assembly
58. Determine most applicable programming language for problems
59. Incorporate standard routines into programs
60. Make modifications to existing programs
61. Review programs for effective use of memory
62. Review programs for effective use of data storage devices
63. Review programs for efficiency of logic
64. Prepare source data for program testing
65. Test new computer programs
66. Test revised computer programs
67. Analyze results of program tests including review of tape dumps, punched cards, printed reports, paper tapes, etc.
68. Generate program control counts and messages needed to monitor routine program usage
69. Resolve program errors through the use of a memory dump
70. Manually convert numbers from one number base system to another

B. COMPUTER PROGRAMMING (cont'd)

STEP 1	STEP 2
CHECK PREVIOUS JOB TASKS	ENTER TIME CODE

71. Manually translate routines written in symbolic language into machine language
72. Program in a real time environment
73. Prepare detailed program flowcharts or decision tables
74. Prepare technical memoranda to other programmers
75. Review existing programs for applicability of new techniques
76. Write programs for one-time-only use
77. Review and upgrade existing program documentation
78. Prepare instructions for console operators.
79. Prepare instructions for processing of data by off-line support equipment
80. Prepare instructions for clerical staff and others that are required to prepare input to or use output from the Program
81. Prepare instructions for scheduling of computer programs
82. Prepare instructions for evaluation of program generated messages and counts
83. Prepare instructions for operation of on-line peripheral equipment
84. Maintain a library of program processing documentation
85. Write and use subroutines
86. Recommend corrections and modifications to systems
87. Confer with clerical staff and other functional personnel to determine specific program processing requirements
88. Design and document disk storage formats
89. Design direct access file keys
90. Design and document card storage formats
91. Design and document drum storage formats
92. Design and document tape storage formats
93. Design random access formulas
94. Design report formats
95. Code program to access file sequentially

B. COMPUTER PROGRAMMING (cont'd)

STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE

96. Code program to access disk or drum file nonsequentially
97. Code binary search routines
98. Code program to match multiple input files
99. Code program to print report on standard continuous form
100. Code program to print report on special preprinted form
101. Write specifications from which others will write programs
102. Estimate time required to write programs
103. Search technical manuals to handle unfamiliar programming problems
104. Develop program documentation standards for use by others
105. Develop program coding standards for personal use
106. Develop program documentation standards for personal use
107. Develop program coding standards for use by others
108. Respond to and correct problems that occur during routine use of program

Commercial Programming

109. Code computer applications using a report program generator
110. Code backup programs required to support maintenance of a nonsequential direct access file
111. Code routines that will "abort" programs when a critical error occurs
112. Code program to edit data and reject records containing errors
113. Code program that updates a sequential master file
114. Code program that has more than one major logic path
115. Code program that required data at execution to be supplied by operator or use of a card, etc.
116. Code program with print file restart capability

B. COMPUTER PROGRAMMING (cont'd)

STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE

117. Code program to support interactive application
118. Code routine to check sequence of input master file
119. Code program to generate a tape or disk report file for off-line printer
120. Code program to generate a tape or disk file for microfilm process
121. Code program to support inventory activity
122. Code program to support personnel activity
123. Code program to support accounting activity
124. Code program to produce printed data for distribution to an external organization
125. Code program to prepare disk or tape file for use by external organization
126. Code program routine to sort data stored in computer memory

Scientific Programming

127. Perform analog programming task
128. Construct mathematical models
129. Code program that uses floating point numerical representation
130. Code program routine to perform matrix inversion
131. Program a linear problem
132. Program a nonlinear problem
133. Code program for correlation or regression analysis
134. Code program for data reduction
135. Code program to solve simultaneous equations
136. Code program to perform factor analysis
137. Code program to perform matrix multiplication
138. Code program to perform physical simulation
139. Code program to perform random sampling
140. Code program to test hypothesis
141. Code program to develop frequency distribution
142. Code program to compute means and standard deviations
143. Code program to perform tabulations

B. COMPUTER PROGRAMMING (cont'd)

STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE

Computer Systems Programming

144. Analyze or modify computer language
145. Write assembly program
146. Write a compiler
147. Develop flexible general purpose programs
148. Write program to sort data file
149. Write subroutine for general use.
150. Write program which will monitor computer systems
151. Write program to support cathode ray application
152. Revise or modify systems monitor program
153. Revise systems library program
154. Evaluate possible changes to computer hardware or systems software and make recommendations
155. Install new version of computer system
156. Determine interface requirements needed to incorporate software package, routine, or subprogram into system
157. Evaluate the impact of proposed language and procedural changes or compilers executive and I/O control programs, and similar system programs
158. Provide consultation services to commercial and scientific application programmers

C. SYSTEMS ANALYSIS AND DESIGN

159. Define objectives of a systems study
160. Define assumptions and constraints of a systems study
161. Develop schedule for systems study
162. Use methods such as PERT or CPM to develop schedule
163. Prepare block diagram or macro level flowchart indicating information flow
164. Estimate feasibility of developing new system
165. Prepare written report outlining results of systems study

C. SYSTEMS ANALYSIS AND DESIGN (cont'd)

STEP 1	STEP 2
CHECK PREVIOUS JOB TASKS	ENTER TIME CODE

166. Prepare formal presentation of systems study for review by peer group
167. Prepare formal presentation of systems study for high level management
168. Identify problem areas in current systems through review of systems flowcharts, problem reports, etc.
169. Evaluate source data for duplication
170. Evaluate source data for inadequacies
171. Evaluate the relationship of source data to output reports and other end products
172. Evaluate content, sequence, and purpose of current files
173. Evaluate the distribution, utilization, and format of output reports and other end products
174. Evaluate cost effectiveness of current processing steps
175. Evaluate cost of various data acquisition methods
176. Evaluate the feasibility of using existing system as a basis for development of new system
177. Evaluate responsiveness of system
178. Prepare detailed document flow diagrams
179. Design input and output files
180. Determine processing, storage, and retrieval techniques
181. Prepare detailed systems flowcharts
182. Update and review developmental plans and schedules
183. Prepare formal progress reports on systems development
184. Estimate systems and programming man-hours required for systems development
185. Estimate cost of computer and other support equipment and personnel required to support systems development
186. Develop a plan for testing new systems
187. Describe requirements of systems test data
188. Prepare and coordinate the preparation of systems test data

C. SYSTEMS ANALYSIS AND DESIGN (cont'd)

STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE

189. Coordinate systems development with clerical staff and other functional areas
190. Coordinate systems development with programmers
191. Coordinate systems development with equipment operators
192. Prepare recommendations for the acquisition of proposed processing equipment required by new system.
193. Estimate size and time requirements of processing runs
194. Use factor analysis, probability theory, queuing theory, or gaming theories to assist systems design.
195. Review technological developments for potential use in new or existing systems
196. Design system using photographic (micrographic) storage and retrieval equipment
197. Design system using teleprocessing equipment
198. Design system utilizing interactive processing techniques
199. Design system utilizing data base concepts
200. Design system utilizing optical character recognition device
201. Design system utilizing data inscription device
202. Design system to perform data conversion or data reduction
203. Design real time system
204. Design process control system
205. Design system audit trails
206. Design system quality control procedure
207. Design method of routine generation and review of critical feedback data
208. Design data card files
209. Design continuous report formats
210. Design special preprinted continuous forms
211. Design magnetic tape files
212. Design sequential disk or drum file
213. Design nonsequential disk or drum file

C. SYSTEMS ANALYSIS AND DESIGN (cont'd)

STEP 1	STEP 2
CHECK PREVIOUS JOB TASKS	ENTER TIME CODE

214. Design direct access file key
215. Design random access formula
216. Design coding structurer for data files
217. Prepare written specifications for programmers
218. Prepare documentation of all systems data files
219. Prepare documentation of inputs, outputs and procedures for clerical staff and other functional areas that interact with system
220. Schedule and coordinate periodic systems evaluation session with representatives of all areas that interact with system
221. Brief various groups of personnel on the capabilities of new system and related equipment
222. Monitor initial use of various systems components through personal inspection
223. Prepare statistical reports analyzing various functions of system
224. Prepare charts and procedures required to control input and output files
225. Define data file retention and backup requirements
226. Provide systems consultation service to peers
227. Provide systems consultation services to top management or potential customers
228. Assess the effect on system of uncontrollable variables such as federal tax regulations, new legislation, corporate policy, industry goals, etc.

D. DATA PROCESSING MANAGEMENT

Items 229 through 244 are of a general nature and do not represent management of a particular sector of data processing. Items 245 through 263 are related to the management of data processing operations; items 264 through 278 are directed towards management of programmers, and items 279 through 294 cover the management of systems analysts.

	STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE
General		
229. Review technical expertise of staff		
230. Prepare staff development program to respond to individual inadequacies and to stimulate self-improvement		
231. Review plans for major projects		
232. Review trade publications for technical advances, and disseminate information to appropriate staff members		
233. Establish procedural standards		
234. Assign tasks to technical staff		
235. Quantify workload and, when necessary, justify changes to staff complement		
236. Prepare reports for top-level management		
237. Justify and recommend the acquisition of new processing hardware		
238. Justify and recommend the acquisition of commercial software packages		
239. Coordinate short-range response to problems		
240. Coordinate long-range response to problems		
241. Coordinate all activites of your staff with managers of other data processing areas		
242. Coordinate all activities of your staff with managers of areas not related to data processing		
243. Periodically inspect specific jobs completed by your staff		
244. Prepare progress reports on major developmental activities		
Management of Operations		
245. Coordinate the establishment of operational schedules		
246. Prepare shift reports		
247. Coordinate shift turnover		

D. DATA PROCESSING MANAGEMENT (cont'd)

STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE

248. Requisition data processing equipment
249. Review the adequacy of systems and programming documentation
250. Review production reports to maintain effective equipment utilization
251. Review or prepare cost estimates for machine processing
252. Establish levels of required stock and initiate reorders as needed
253. Establish processing priorities
254. Establish a library of technical manuals and supervise their maintenance
255. Assist staff in interpreting technical manuals, directions, etc.
256. Establish and maintain a data file management system
257. Coordinate with managers of programmers and systems analysts on matters of joint interest
258. Develop standard operational procedures
259. Establish housekeeping routines
260. Establish procedures to maintain temperature and humidity within specified ranges
261. Establish safety procedures for equipment operators
262. Establish security procedures to protect installation and maintain confidentiality of sensitive data files
263. Monitor machine down time logs for recurring problems and implement solutions

Management of Programmers

264. Prepare periodic progress reports for major programming tasks
265. Participate in the development of programming aids
266. Participate in the development of program documentation standards
267. Participate in the development of program coding standards
268. Participate in the development of program testing standards

D. DATA PROCESSING MANAGEMENT (cont'd)

STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE

269. Establish programming priorities
270. Establish program execution priorities for operations
271. Establish and maintain sufficient stock levels for forms, coding sheets, etc.
272. Periodically inspect specific programs written by subordinates
273. Review flowcharts, program specifications, and other systems documentation prior to major programming efforts
274. Monitor programming errors and implement solutions to recurring problems
275. Establish and maintain technical reference library
276. Assist programmers in using technical manuals
277. Estimate the magnitude of various programming tasks
278. Coordinate with managers of operations and systems analysts on matters of joint interest

Management of Systems Analysts

279. Prepare progress reports for major systems tasks
280. Participate in the development of systems analysis and design standards
281. Participate in the development of systems documentation standards
282. Participate in the development of systems testing standards
283. Establish workload priorities
284. Establish and maintain supplies of materials needed by systems analysts
285. Review systems studies and preliminary systems design efforts prior to implementation
286. Estimate the magnitude of various systems analysis tasks
287. Establish a system of controls that will assure timely and effective completion of systems development projects
288. Detect systems problems and coordinate the development and implementation of solutions

D. DATA PROCESSING MANAGEMENT (cont'd)

STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE

289. Coordinate with managers of operations and programmers on matters of joint interest
290. Establish procedures for the periodic review of existing systems
291. Organize systems analysis and design task force teams
292. Prepare periodic status reports on major systems efforts
293. Coordinate development of systems analysis aids
294. Review requests for development of new systems

E. TRAINING

295. Act as training advisor at staff level
296. Administer or score tests designed to detect staff inadequacies
297. Plan and coordinate on-the-job training programs
298. Conduct on-the-job training
299. Conduct training sessions as required
300. Develop comprehensive sources of technical information
301. Determine training requirements for various data processing areas
302. Develop course curricula and plans of instruction
303. Enroll personnel in career development courses
304. Evaluate training methods, techniques, or programs
305. Maintain training records
306. Procure training aids, space, or equipment
307. Assess training progress of individuals
308. Develop job proficiency guides
309. Develop justification for training facilities, equipment, publications, materials, etc.
310. Write training reports
311. Coordinate the dissemination of information about the availability of courses

E. TRAINING (cont'd)

STEP 1	STEP 2
CHECK PREVIOUS JOB TASKS	ENTER TIME CODE

312. Coordinate staff educational needs with the needs and goals of various data processing managers

F. PROCESS SCHEDULING AND CONTROL

313. Coordinate analysis and, where necessary, resubmission of jobs that were not processed successfully
314. Arrange reruns and special checks to proof final output
315. Compare data arithmetically with predetermined control totals
316. Compile progress reports of data processed during a period of time
317. Contact clerical areas and other functional personnel to coordinate submission and evaluation of data
318. Control automatic data processing equipment vouchers or data processing equipment work requests
319. Coordinate preparation of production schedules
320. Monitor cost effectiveness of various data processing activities
321. Maintain files of reports, regulations, or directives pertaining to operational use of data systems
322. Maintain files of technical manuals
323. Prepare correspondence concerning data processing services
324. Prepare recommendations for improved efficiency in specific operations
325. Coordinate activity in all operational areas having responsibility for processing data
326. Monitor control of input and output files
327. Provide files for specific processing runs
328. Assemble jobs for submission to a computer
329. Monitor operational progress to assure compliance with specified deadlines
330. Respond to discrepancies uncovered by routine quality control procedures

V. General Comments

List any other relevant tasks that you performed on your previous jobs in data processing that were not listed in the previous section. You may also make other general comments that you feel may be relevant to your work experience.

APPENDIX B.
PRACTICAL JOB DESCRIPTIONS FOR BUSINESS PROGRAMMER

The task descriptions listed here were isolated from Raymond M. Berger's *Computer Programmer Job Analysis*. Only those tasks viewed by programmers as being important are listed. The very important and most important tasks of this analysis are pointed out. These tasks can be used to develop a Work Experience Checklist as in Appendix A and to define course outcomes.

PRACTICAL JOB DESCRIPTIONS FOR BUSINESS PROGRAMMER

I. Planning and Analysis

A. System/Problem Analysis

1. Evaluate the impact of proposed changes and error corrections on existing programs.

B. Methodology

1. Evaluate proposed changes, conversions, or corrections by studying program listing and documentation.
2. Determine detailed data descriptions, file layouts and record descriptions, revision of forms for files and records, and the specific calculations to be performed, especially in the handling of exceptions.
3. Obtain information from source documents such as operating procedures, policy documents, source data and report formats, and data file descriptions.

II. Program Development

A. Design

1. Devise program modification to effect a desired change or correct an error, such as determining changes to data items or tracing program flows to ensure the adequacy of the modification—(most important task).
2. Design programs and routines from formal statements of program system requirements such as problem definitions, system specifications, procedures manuals, and performance characteristics.
3. Adapt existing programs and routines to perform the required processing or to operate on a different machine or operating system.

B. Methodology

1. Optimize input and processed data quality by appropriate data editing and checking procedures such as checking for values in range, proper coding, overflows, etc.
2. Optimize data handling techniques and computational procedures for the best handling of specific applications.

III. Business Programming: Program Implementation

A. Coding and Debugging (The Most Important Set of Tasks on the Job)

1. Code and debug program changes and corrections—(most important task).
2. Code and debug from formal program specifications, data descriptions, and flow charts—(most important task).
3. Code from informal descriptions developed with the customer, which might include holding general problem conferences, providing private advice, or making written recommendations and estimates.
4. Write and debug code to adapt existing programs and routines to a new

machine or operation, convert an existing program to a new language, and/or revise existing programs to improve their efficiency.

B. Methodology

1. Code and debug in a compiler language (e.g., COBOL), simulation language (e.g., SIMSCRIPT), or other higher level language (e.g., LISP)—(most important task).
2. Desk-check code, which might include the review of coding formats, the accessing of records for processing, the maintenance of temporary working/storage areas and files, the control of iterative processing, and/or the logical sequence of instructions/statements—(most important task).
3. Debug programs using trap-and-trace routines, dumping registers or core, instruction-stepping at an on-line console.
4. Code programs to operate in such modes as stand-alone, mixed batch, time-sharing, and real-time.

C. Communication/Documentation

1. Write general instructions for using and operating a program, and instruct users and operators in running the program.—(most important task).
2. Document a program by appropriate commentary with source language instructions, program listings, and/or automatic program environment analyses—(most important task).
3. Maintain existing program documentation to reflect the results of conversions or modification.

IV. Business Programming: Program Testing and Installation

A. Testing and Checking

1. Devise tests to check out program changes and corrections and to ensure that modifications have not caused undesirable effects elsewhere in the program.
2. Devise tests on the basis of formal documentation such as problem definitions, and system/program specifications and descriptions, and by analysis of application area and performance requirements.
3. Devise test in conjunction with the customer using what you know about the program and the kind of tests that are needed.

B. Methodology

1. Use data captured from real operations (i.e., "live" inputs)—(very important task).
2. Use test data manually created.
3. Test program parameters to ensure that programs will accept the full range of allowable input values, account for all input combinations, and respond accurately to all erroneous inputs (i.e., exercise all error returns)—(very important task).
4. Analyze problems to trace their probable cause to program, computer, personnel, peripheral equipment, etc.
5. Run programs for shakedown periods or in parallel operations.
6. Test successively larger combinations of programs to ensure that all programs interface properly until the total system has been evaluated.

C. Communication/Documentation

1. Work with customers and programmers and report to them in a relatively informal manner to ensure all performance requirements and program specifications are met and programs are working properly

V. Business Programming: Program Support

A. Standards

1. Utilize and enforce the standard record formats, item structures, and coding procedures established by the programming language and operating system.

B. Supervision

1. Assume responsibility for a set of programming functions or functional area (e.g., program testing, accounts receivable, etc.).

C. Training and Professional Development

1. Study and analyze programming manuals in order to become proficient in the use of the language.
2. Consult with colleagues or supervisors for the purpose of acquiring technical programming guidance or system knowledge.

APPENDIX C.
INTERVIEW SCHEDULE IN DATA PROCESSING

This is an example of a screening interview and oral test designed to determine whether the student is sufficiently knowledgeable in the field to merit further assessment.

INTERVIEW SCHEDULE

Q1. Please identify the most significant program for which you had full responsibility.
Q2. Were the specifications of this application given to you by a senior programmer/analyst, or did you dialog directly with the person or persons who will utilize your program?
Q3. What data access method did you use in this application (Sequential, Indexed Sequential, or Random)?
Q4. Did you use any specific algorithm? If so, which one, and why was it chosen?
Q5. How many statements were used in this program?
Q6. Did you develop the flowchart, or was it given to you?
Q7. Was the program modularized/segmented? If so, please explain how you established this modularity.
Q8. Did you use a uniform labeling convention for modules, paragraphs, statements, and variables? If so, please explain.
Q9. What procedures or designs did you use to ensure that bugs in the execution phase of your program would be easily identified?
Q10. Did your final code listing contain remarks and annotations to ensure its readability for future maintenance? Please describe.
Q11. Before your first attempt at compilation, did you perform a thorough desk check? If so, describe your procedure.
Q12. Have you ever used Trace, On, or Exhibit Cobol commands in debugging a program?
Q13. Have you used a cross-reference listing to identify program bugs?
Q14. Have you ever used assembly language listings or core dumps to debug your work?
Q15. Have you used decision tables in the development of your Cobol programs?
Q16. Have you written programs to sort files? Please describe the application.
Q17. Have you used the report writing features in Cobol?
Q18. Did you write up a comprehensive operators' guide and/or users' manual for your program?
Q19. Have you formally presented your work before a group of users or members of your department?
Q20. What was the most difficult problem you encountered in working on this application?

Note: Questions 12-17 place stress on more advanced features in the ANSI Cobol language.

APPENDIX D.
PERFORMANCE TEST ON THE OPERATION OF THE IBM 083 SORTER*

This is an example of a performance test for a widely used business machine. It illustrates the highly desirable procedure of listing step-by-step directions for preparing to give the test. These kinds of directions make it possible for a test to be more than a one-man activity. The individual test-writer/administrator may know how the equipment is to be prepared for examinees, but the procedures must be written in detail if others are to administer the test in the intended way.

Performance Test: Operation of IBM 083 Sorter

NOTE: There are six possible versions or combinations of the job-required task of operating an 083 sorter. These six possible versions are alpha sorting, numeric sorting, card counting, block sorting, selection by sorting, and selection by rejection. The test illustrated in the following paragraphs examines performance of numeric sorting, card counting, and block sorting.

1. Directions for preparing for, and administering, the test.

a. Preparation for the test.

(1) Place a deck of 250 cards with punched information on each 083 sorter. Columns 26-28 must contain numeric data.
(2) Insure that the machine is on and warmed up.
(3) Depress all suppression keys.
(4) Set edit and edit stop and sort test switches in the ON position.
(5) Set the card count switch in the OFF position.
(6) Reset the card count indicator.
(7) Set sort selection switch in an erroneous position.

b. Administration of the test.

(1) Issue the student the "Directions to Students" (par. 2 below).
(2) Direct the student to read the entire problem before beginning.
(3) Observe the student's performance. Record the student's performance on the scoring sheet (para. 3 below). Score the student's performance as he proceeds through the steps. If after a reasonable time the student is unable to proceed, score that step "NO," help the student only on that step, and allow the student to proceed.
(4) Insure that the student gives his card count orally at the end of the problem. If incorrect, score item 12 "NO." After completion of the test, determine the reason for the incorrect card count and correct the error.

2. Directions to students: 083 Sorter Test.

a. General instructions. This is a graded examination. All work in this examination must be your own. You are not authorized to communicate in any way with other students, give or receive assistance, refer to notes, make a record of your answers, or pass on information about the examination to other students. Any conduct contrary to the above will be the basis for appropriate disciplinary action.

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*Adapted from: Joseph L. Boyd and Benjamin Shimberg, *Handbook of Performance Testing: A Practical Guide for Test Makers*. Princeton, N.J.: Educational Testing Service, 1970, pp. 89-92.

b. Special instructions.

(1) The deck of cards placed on the machine is the deck you will work with on this problem.
(2) Insure that your machine is operating properly.
(3) If you think it is appropriate, you may accomplish more than one step in the same operation.
(4) Using the block sort method, sort the cards as follows
  (a) Sort columns 26 through 28 numerically:
    Column 28 minor.
    Column 27 intermediate
    Column 26 major.
  (b) Card count all cards.
(5) Upon completion of the operation outlined above, assemble your cards in proper order and return the entire deck to the instructor, informing him of your card count.
(6) Leave the machine on.

c. Material required. A deck of cards to be sorted will be supplied by the instructor.

d. Time Limit. There is no time limitation. However, if you are not able to proceed after a reasonable time at any step of the operation, the instructor will assist you and you will be evaluated accordingly.

3. Directions for scoring 083 Sorter Test.

STUDENT NAME _____ **STUDENT NUMBER** _____ **DATE** _____

1. Cards joggled before being placed in hopper.	**YES**	**NO**
2. Cards placed properly in hopper.	**YES**	**NO**
3. Suppression keys checked.	**YES**	**NO**
4. Sort test switch in SORT position.	**YES**	**NO**
5. Edit and edit stop switches in OFF position.	**YES**	**NO**
6. Sort selection switch set properly for each sort.	**YES**	**NO**
7. Sort brush set on proper column for blocking.	**YES**	**NO**
8. Sort brush set on proper column for minor sort.	**YES**	**NO**
9. Sort brush set on proper column for intermediate sort.	**YES**	**NO**
10. Cards removed properly from machine.	**YES**	**NO**
11. Sight check performed.	**YES**	**NO**
12. Card count made at beginning and end of operation.	**YES**	**NO**
13. All cards in correct sequence when returned to instructor.	**YES**	**NO**

Instructor _____

APPENDIX E.
WORK EXPERIENCE CHECKLIST IN LAW ENFORCEMENT

Instructions to the Student:

The purpose of this questionnaire is to help you to describe in a systematic manner your work experience in the law enforcement field. The information that you provide on the skills and knowledges that you acquired in previous work situations will be useful in integrating your occupational learning experiences with your specific educational goals. By indicating whether you have had experience in performing various specific job tasks, you and your faculty advisor will be in a better position to decide whether you should be considered for academic credit and to determine the kind of additional instruction that you will need in order to satisfy the requirements of your major field.

Complete this checklist if you have job experience in one or more of the positions listed below or in other positions in the law enforcement field. Check all the position(s) in which you have some experience:

_____ Patrolman
_____ Detective
_____ Corporal
_____ Sergeant
_____ Lieutenant
_____ Captain
_____ Military policeman
_____ Police chief
_____ Other (Please specify)_____

I. Background Information

1. Your Name_____
   Last First Middle Initial
2. Address _____
   Street
   _____
   City State Zip
3. Social Security Number _____
4. Sex _____ Male _____ Female
5. Age_____

II. Educational History

1. What is the highest grade (or level) of formal education which you have completed?
   _____ 8th grade or less
   _____ 9th, 10th, or 11th grade
   _____ high school graduate (or GED diploma)
   _____ some college
   _____ college graduate
2. Are you presently enrolled in college?
   _____ Yes
   _____ No (skip to Question 6)
3. Class in college
   _____ Freshman
   _____ Sophomore
   _____ Junior

_____ Senior
_____ Other (Please specify) _____

4. What is your major field? _____

5. Have you participated in a college-sponsored work-study program in criminal justice?

_____ Yes
_____ No

6. Have you taken any college-level courses in criminal justice? If yes, which ones?

_____
_____
_____

7. Which other kinds of courses or seminars in law enforcement have you taken?

_____ courses at a police academy
_____ correspondence courses
_____ courses in the Armed Forces
_____ other (Please specify) _____

III. Employment History in Law Enforcement

1. List below the positons you held in the law enforcement field. Indicate your last job first.

Position or Rank	Agency and Sub-Unit (e.g., Chicago Police Department, patrol)	Period of Time in that Position		Name, title and address of your Supervisor
		Yrs.	Months	

IV. Job Inventory Checklist

Listed on the following pages are specific tasks which are typically conducted by policemen. The task descriptions are divided into six major categories: A. Police Operations, B. Criminal Investigation, C. Criminal and Constitutional Law, D. Criminal Evidence, E. Criminal Procedures, and F. Administration. Read each category and indicate with a check (✓) which tasks you performed in your previous work. Relative time means the total time you spent doing the task compared with the time you spent on each of the other tasks on your previous jobs. Then enter the relative time you spent on the task by using the code numbers given below. If you had more than one previous job in which a different amount of time was spent on a task, use a code number that will represent the average time spent on that particular task. (Do not be concerned that you have not accomplished many of the tasks listed as no student is expected to have performed all, or even most, of the tasks.)

CHECK (✓) ALL OF THE TASKS YOU HAVE PERFORMED IN THE *ENTIRE COLUMN* OF STEP 1 BEFORE YOU BEGIN TO ENTER THE TIME CODE FOR EACH IN STEP 2. ENTER TIME CODE ONLY FOR TASKS YOU HAVE PERFORMED.

TIME CODE

1. VERY MUCH BELOW AVERAGE TIME ON THIS TASK.
2. BELOW AVERAGE TIME.
3. AVERAGE TIME.
4. ABOVE AVERAGE TIME.
5. VERY MUCH ABOVE AVERAGE TIME ON THIS TASK.
   (Time does not necessarily equal importance)

Example:

	STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE
1. Issue moving traffic citations	✓	5
2. Issue warning tickets		
3. Administer field tests for intoxication (coordination tests, etc.)	✓	4
4. Check autos against stolen car list		
5. Recover stolen automobile	✓	2

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A. POLICE OPERATIONS

	STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE
1. Issue moving traffic citations		
2. Issue warning tickets		
3. Administer field tests for intoxication (coordination tests, etc.)		
4. Check autos against stolen car list		
5. Recover stolen automobile		
6. Control spectator access to traffic crash scene		
7. Call for supplementary aid (e.g., wreckers, fire department) for traffic crashes		
8. Conduct preliminary investigation on hit-and-runs		
9. Prepare accident report		
10. Direct or control nonroutine congested traffic		
11. Report hazardous conditions		
12. Suggest changes in traffic control procedures		
13. Plan and direct selective traffic enforcement work		
14. Prepare accident statistical data		
15. Conduct special studies of accident records		
16. Calculate average accident rates		
17. Calculate roadway or intersection capacity		
18. Decide on the location for installing traffic control signs		
19. Advise city planners on traffic planning		
20. Advise city planners on traffic engineering needs		
21. Prepare officer's notebook		
22. Prepare research reports		
23. Create charts and graphs		
24. Develop maps or charts		
25. Handle a family disturbance		
26. Handle an insane person		
27. Handle a bomb threat		
28. Guard a crime scene		
29. Review offense reports to establish M.O.		
30. Prepare missing person report		
31. Respond to riot		
32. Control spectators at civil disturbances		
33. Develop plan for crowd control operation		
34. Develop plan for organizing crowd control units or operations		

A. POLICE OPERATIONS (cont'd)

	STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE
35. Implement restraining order against demonstrators		
36. Communicate with leaders of demonstrations		
37. Implement restraining order against strikers		
38. Communicate with labor and management over strike disturbances		
39. Develop disaster control plans		
40. Evaluate emergency procedures		
41. Maintain liaison with other law enforcement or other community agencies		
42. Coordinate police actions with other units or agencies		
43. Supervise law enforcement patrol tactics		
44. Supervise use of communications equipment or vehicles		
45. Supervise directing and controlling traffic		
46. Supervise investigation of traffic accidents		
47. Supervise breakdown and study of traffic enforcement and accident data		
48. Supervise traffic case preparation		
49. Supervise criminal case preparation		
50. Supervise preliminary investigations		
51. Conduct weapons qualification activities		
52. Conduct proficiency or qualification training		
53. Instruct trainees		
54. Work as field training officer		
55. Participate in training conferences		
56. Conduct orientation of newly assigned personnel		
57. Conduct on-the-job training		
58. Interpret policies, directives, or procedures for subordinates		
59. Assign personnel to duty positions		
60. Plan or schedule work assignments or work loads		
61. Determine work priorities		
62. Analyze work load requirements		
63. Evaluate work schedules		
64. Develop or improve work methods or procedures		
65. Conduct driver education courses in public or private schools		

A. POLICE OPERATIONS (cont'd)

	STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE
66. Provide traffic safety education to the public		
67. Solicit help from citizens in reporting and detecting crime		
68. Receive complaints on city services		
69. Refer citizens to appropriate private agency when their requests are not within the scope of police work		

B. CRIMINAL INVESTIGATION

70. Conduct preliminary investigation of a larceny		
71. Conduct full investigation of a larceny		
72. Conduct preliminary investigation of an auto theft		
73. Conduct full investigation of an auto theft		
74. Recover stolen automobile		
75. Conduct preliminary investigation of a burglary		
76. Conduct full investigation of a burglary		
77. Conduct preliminary investigation of a robbery		
78. Conduct full investigation of a robbery		
79. Conduct preliminary investigation of an assault with deadly weapon		
80. Conduct full investigation of an assault with deadly weapon		
81. Conduct preliminary investigation of a murder		
82. Conduct full investigation of a murder		
83. Conduct preliminary investigation of a sudden or suspicious death		
84. Conduct full investigation of a sudden or suspicious death		
85. Conduct preliminary investigation of a fire		
86. Conduct full investigation of a fire		
87. Conduct preliminary investigation of a suspicious person		
88. Conduct full investigation of a suspicious person		
89. Conduct preliminary investigation of a rape		
90. Conduct full investigation of a rape		
91. Conduct preliminary investigation of a sex offense other than rape		

B. CRIMINAL INVESTIGATION (cont'd)

	STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE
92. Conduct full investigation of a sex offense other than rape		
93. Investigate narcotics violations		
94. Investigate gambling violations		
95. Investigate consumer complaints		
96. Investigate repossession complaints		
97. Solicit help from citizens in reporting and detecting crime		
98. Obtain "portrait parle" of suspect		
99. Conduct a criminal surveillance		
100. Question known offenders and persons who arouse suspicion		
101. Administer field tests for drug and alcohol use		
102. Make use of informants		
103. Arrest juvenile suspects		
104. Prepare affidavit for search warrant		
105. Conduct searches of buildings		
106. Collect physical evidence at scene of crime		
107. Label evidence collected at scene of crime		
108. Conduct the booking process of a suspect at police desk		
109. Check past record of prisoner for inclusion in reports		
110. Interrogate suspects		
111. Study background, rap sheet, and M.O. of suspects prior to interrogation		
112. Vary method of interrogation based on suspect's background, cultural differences		
113. Advise prisoners of their legal and civil rights		
114. Record identifying information obtained from prisoner		
115. Interrogate suspects or witnesses with aid of polygraph		
116. Operate breath analyzer		
117. Operate voiceprinter		
118. Operate spectrograph		
119. Take photographs during investigation		
120. Prepare arrest report		

B. CRIMINAL INVESTIGATION (cont'd)

STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE

121. Prepare accident report
122. Prepare officer's notebook
123. Prepare missing person report
124. Prepare narrative report
125. Prepare suspect interrogation card
126. Prepare report on evidence collected
127. Prepare investigation report
128. Prepare juvenile investigation report
129. Prepare vice observation report
130. Prepare vehicle theft report
131. Review offense reports to establish M.O.
132. Supervise follow-up investigations
133. Direct investigation activities
134. Testify in court on criminal cases
135. Discuss criminal cases with prosecutor
136. Prepare criminal case summary sheet for prosecutor
137. Prepare criminal case folders
138. Prepare charge for magistrate
139. Supervise criminal case preparation

C. CRIMINAL AND CONSTITUTIONAL LAW

140. Prepare affidavit for search warrant
141. Conduct searches of buildings
142. Search vehicle for evidence and weapons
143. Search suspects for evidence and weapons
144. Collect physical evidence at scene of crime
145. Question known offenders and persons who arouse suspicion
146. Advise persons involved in minor infractions of alternatives to arrest
147. Advise prisoners of their legal and civil rights
148. Interrogate suspects
149. Prepare suspect interrogation card
150. Interrogate suspects or witnesses with aid of polygraph

C. CRIMINAL AND CONSTITUTIONAL LAW (cont'd)

	STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE
151. Arrest juvenile suspects		
152. Investigate consumer complaints		
153. Obtain restraining order against demonstrators		
154. Implement restraining order against demonstrators		
155. Obtain restraining order against strikers		
156. Implement restraining order against strikers		
157. Communicate with labor and management over strike disturbances		

D. CRIMINAL EVIDENCE

158. Collect physical evidence at scene of crime		
159. Label evidence collected at scene of crime		
160. Conduct searches of buildings		
161. Search vehicle for evidence and weapons		
162. Search suspect for evidence and weapons		
163. Investigate narcotics violations		
164. Investigate gambling violations		
165. Take photographs during investigation		
166. Administer field tests for drug and alcohol use		
167. Operate breath analyzer		
168. Operate voiceprinter		
169. Operate spectrograph		
170. Interrogate suspects or witnesses with aid of polygraph		

E. CRIMINAL PROCEDURES

171. Prepare affidavit for search warrant		
172. Advise persons involved in minor infractions of alternatives to arrest		
173. Arrest juvenile suspects		
174. Conduct the booking process of a suspect at police desk		
175. Advise prisoners of their legal and civil rights		

E. CRIMINAL PROCEDURES (cont'd)

STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE

176. Testify in court on criminal cases
177. Discuss criminal cases with prosecutor
178. Prepare charge for magistrate
179. Prepare criminal case folders
180. Prepare criminal case summary sheet for prosecutor

F. ADMINISTRATION

181. Locate, interview, and establish credibility of witnesses
182. Take statements or depositions from witnesses
183. Send evidence to lab for analysis
184. Collect traffic crash evidence
185. Interview those involved in traffic crash
186. Determine point(s) of impact in traffic crash
187. Determine key or crucial events related to the traffic crash
188. Check crashed vehicles for evidence of mechanical defects that contributed to crash
189. Photograph accident and/or crime scene
190. Diagram and record measurement of traffic crash scene
191. Prepare accident statistical data
192. Conduct preliminary investigation on hit-and-runs
193. Conduct follow-up on hit-and-runs
194. Investigate complaints against police
195. Explain goals and policies of police department to citizens
196. Plan a human relations program
197. Implement human relations programs
198. Evaluate human relations programs
199. Direct community relations program
200. Evaluate individuals for promotion or demotion
201. Evaluate and recommend personnel for special training or duty assignments
202. Evaluate compliance with work standards

F. ADMINISTRATION (cont'd)

	STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE
203. Establish performance standards		
204. Analyze work load requirements		
205. Evaluate work schedules		
206. Draft or revise job descriptions		
207. Evaluate job descriptions		
208. Develop organizational or functional charts		
209. Requisition supplies or equipment		
210. Maintain an inventory of supplies or equipment		
211. Direct maintenance of equipment		
212. Determine requirements for space, personnel equipment, or supplies		
213. Evaluate use of workspace, equipment, or supplies		
214. Plan layout of facilities		
215. Direct administrative police activities		
216. Direct maintenance of administrative files		
217. Evaluate administrative forms, files, or procedures		
218. Draft a budget		
219. Evaluate budget		
220. Establish organizational policies, office instructions, or special security instructions		
221. Maintain training records		
222. Plan a training program		
223. Implement training programs		
224. Direct training programs		
225. Evaluate training programs		
226. Evaluate training methods, techniques, or programs		
227. Plan or evaluate on-the-job training programs		
228. Procure training aids, space, or equipment		
229. Participate in training conferences		
230. Conduct training conferences		
231. Determine training requirements		
232. Develop course curriculum materials		
233. Conduct orientation of newly assigned personnel		
234. Demonstrate how to locate technical information		
235. Plan or prepare briefings		

F. ADMINISTRATION (cont'd)

	STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE
236. Conduct or participate in staff meetings		
237. Test, analyze, or evaluate police programs		
238. Evaluate emergency procedures		
239. Develop disaster control plans		
240. Develop plan for crowd control operations		
241. Plan a retention program		
242. Implement retention programs		
243. Evaluate retention programs		
244. Counsel personnel on personal or job-related problems		
245. Implement suggestion programs		
246. Implement safety programs		
247. Implement security programs		
248. Implement cost reduction programs		
249. Plan or conduct inspection programs		
250. Make staff studies, surveys, or special reports		
251. Prepare research reports		
252. Create charts and graphs		
253. Draft directives, manuals, or supplements		
254. Direct analysis of reports		
255. Write press releases		
256. Prepare and present speeches		

V. General Comments

List any other tasks that you performed on your previous positions in the law enforcement field that were not listed in the previous section. You may also make other general comments that you feel may be revelant to your work experience.

APPENDIX F.
ORAL TEST IN CRIMINAL AND CONSTITUTIONAL LAW

Note to Interviewer:

This collection of suggested questions and answers is designed as an aid in interviewing. By asking the student some (not necessarily all) of the questions you should be able to probe his practical knowledge of criminal and constitutional law and thereby make a judgment as to his need for further instruction. You should feel free to modify the questions if you think it will help you make a better assessment of the student's knowledge.

SITUATION A: You and your partner are investigating the disappearance of a woman under suspicious circumstances. In questioning her husband, your partner begins the interrogation before advising the husband of his rights and threatens him with physical force. Under this threat, the husband confesses to killing his wife and tells where he buried her body and where he hid the murder weapon. You arrest the husband. You then obtain a search warrant and recover the body and the murder weapon.

Question 1: Is the husband's confession admissible as evidence in court? Why or why not?

Answer: No, the confession is not admissible. The husband was a suspect and was not advised of his rights at the time of questioning, and the confession was obtained under duress.

Question 2: Is the body admissible as evidence in court? Why or why not?

Question 3: Is the murder weapon admissible as evidence in court? Why or why not?

Answer: No, the body and the weapon are not admissible. They are "fruit of the poisonous tree," because their whereabouts was learned only by violating the husband's constitutional rights. The warrant does not change this fact; it was obtained on the basis of information which was obtained unconstitutionally.

SITUATION B: At 11:00 p.m. you receive a call to respond to a family disturbance in an area of low-rent apartments. When you arrive, the door is opened by a man who claims nobody called the police. Looking past him you see that the room is in disorder, with pieces of broken dishes on the floor and chairs overturned. The man's shirt is rumpled and torn and there are fresh scratches on his face. His breath smells of liquor. The man refuses to give you permission to enter.

Question 1: Do you need a warrant to enter the apartment? If not, what legal justification do you have for entering without a warrant?

Answer: You may enter without a warrant. Because of the condition of the man and the room, there is reason to believe that someone inside may be injured and in need of first aid. There is also reason to believe that a crime has been committed and that an arrest may be immediately necessary, due to the seriousness of the crime.

Question 2: Do you have reason to believe that a crime has been committed? If so, what crime or crimes?

Answer: Assault, rape, disorderly conduct, breach of the peace, burglary (the man may not be the resident).

Question 3: Based on the above information, can you arrest the man? Why or why not?

Answer: No. At this point you do not have sufficient facts to establish a *prima facie* case. The smell of liquor on the man's breath is not sufficient evidence of drunkenness.

Question 4: Can you legally use physical force to enter the apartment? If so, how much force?

Answer: You may use sufficient force to overcome the resistance, but not deadly force.

SITUATION C: You observe a group of about 14 people marching in a circle on the sidewalk in front of a government office building. They are shouting and chanting, "We want jobs." A man comes out of the building and complains that the noise is bothering the workers inside. He wants you to force the marchers to leave. You approach the marchers and ask them to leave. They refuse.

Question 1: Do you have the legal right to force them to leave? Why or why not?

Question 2: If they refuse to leave, do you have the legal right to arrest them? Why or why not?

Answer: No, you may not legally force them to leave or arrest them for refusing to leave. The First Amendment to the United States Constitution guarantees the right of the people "peaceably to assemble, and to petition the Government for a redress of grievances."

SITUATION D: You receive a radio call: "Man holding a prisoner." You proceed to the location where you are met by two men. One of the men identifies himself to you as a private detective and says, "I was hired by Mr. Johnson to investigate the theft of his rare coin collection. I got a tip that this man had it in his house. I came here and found it hidden in the basement. Here's the coin collection and here's the thief. I want you to arrest him."

The accused man replies, "This man came to my house, forced his way in, and slapped me around until I told him I stole Mr. Johnson's coin collection. Then he forced me to show him where it was. I want you to arrest him for assaulting me."

Question 1: Is either the accused man's confession or the coin collection admissible as evidence in court? Why or why not?

Answer: Yes. Both are admissible because the confession was obtained and the evidence seized by a private citizen who was not in any way an agent of the government. (The police did not suggest his action and had no knowledge of it. If they had, he might then be considered an agent of the government.) Because he was not an agent of the government, his actions are not covered by the Fourth and Fifth Amendments.

Question 2: Can you immediately arrest the detective for assault? Why or why not?

Answer: No. The alleged assault was not a felony and did not occur in your presence. Therefore, a warrant must be obtained before an arrest can be made.

SITUATION E: At 10:30 p.m. you receive a call to investigate a suspicious person in an alleyway between two apartment buildings. As you drive up, a man quickly steps out of the alley and begins to walk quickly away.

Question 1: Is it probable that the man committed a crime? If so, what crime or crimes?

Answer: Yes—loitering and prowling.

Question 2: What probable cause do you have to stop the man?

Answer: The time of night, the location, the radio call, and the man's actions.

Question 3: Can you legally frisk this man? If so, what is the legal basis for your right to do so?

Answer: Yes, if you have reasonable grounds to believe the man is armed with an offensive weapon and poses a threat to your safety.

Question 4: If you stop the man, how long can you detain him?

Answer: He may be detained for up to 25 hours without formal charges. But realistically, you may detain him only for sufficient time to establish that he has or has not committed a crime.

SITUATION F: You are in your patrol car when you receive over the radio an announcement that a grocery store about six blocks away has been robbed by a man with a handgun, who escaped on foot with $40. The broadcast includes a general description of the suspect. As you turn a corner, you see a man who fits the description standing on a curb trying to hail a taxi.

Question 1: What probable cause do you have to take this man into custody?

Answer: The radio call, the description of the suspect, the location (near the crime scene).

Question 2: Can you legally frisk this man? Why or why not?

Answer: Yes, because you were told a handgun was used in this crime. If he is the man who committed the crime, he is a threat to your safety.

Question 3: Assume that you frisk him and find no weapon. What should you do with the man, and what legal grounds do you have for your actions?

Answer: Detain him for investigation and take him to the crime scene for possible identification. A felony has been committed, and you have probable cause to believe he committed it.

Question 4: Under what conditions can you legally search the man?

Answer: If he is identified by witnesses or by the victim as the perpetrator, you may search for the money (fruits of the crime), weapons, implements of escape, or contraband.

Question 5: What is the difference between a search and a frisk?

Answer: A frisk is a patting down of the outer garments for the purpose of finding offensive weapons. A search is a detailed examination of the person and possessions.

Question 6: The store clerk tells you, "He pointed the gun at me and said 'Give me all your money.' I opened the cash register and let him take the money out of the drawer." Was this a robbery? If so, what made it a robbery; if not, what crime was it?

Answer: It was a robbery. In the course of committing a theft, the perpetrator threatened death or serious bodily harm to the victim by his use of the gun.

Question 7: What other crimes could the man be charged with?

Answer: Larceny, threats to do bodily harm, violation of the firearms act.

SITUATION G: Last week an appliance store was burglarized and several television sets were taken. The department has received an anonymous tip that several television sets, still in their shipping cartons, are stored in the basement of a drycleaning establishment. You have been assigned to obtain a warrant and make the search.

Question 1: Can you obtain a warrant on the basis of the above facts?

Answer: No. An anonymous tip is not sufficient probable cause.

Question 2: How could you attempt to obtain probable cause for a search?

Answer: Prove that there was a burglary and that television sets were taken. Obtain descriptions of the television sets. Place the house under surveillance.

SITUATION H: You are sitting in your patrol car when a man comes up to you and says, "Officer, I just killed my wife. She was cheating on me and I stabbed her. I didn't mean to kill her but I think she's dead." You then place him under arrest and advise him of his rights. After hearing his rights, he refuses to answer any questions.

Question 1: Is his original statement to you admissible as evidence in court?

Answer: Yes. Under the *Miranda* decision, the Supreme Court specified four exceptions to the rule that confessions are inadmissible if the suspect was not informed of his rights. One of these is the *res gestae* statement—a statement made spontaneously by the perpetrator before he is identified as a suspect.

APPENDIX G.
RATING SCALE FOR JOB PERFORMANCE OF POLICEMEN*

This rating scale consists of five scaled statements within each of eight general police activities:

General Public Safety and Emergency Activities
Traffic Control and Accident Activities
Surveillance and Checking Activities
Clerical and Reporting (Recording Activities)
Routine Potentially Dangerous Emergency Activities
Preventative Activities
Work Preparation Activities
Court Preparation Activities

The rater's task is to select one statement within each general activity that best describes the policeman being rated. The total score of the ratee would be the sum of the scale values. The scale values are shown here for scoring purposes only; they should not be indicated on the actual rating form.

GENERAL PUBLIC SAFETY AND EMERGENCY ACTIVITIES

	Scale Value
A. Calms an agitated prisoner by talking to him in a fair and impartial manner	7.88
B. Informs a prisoner of his constitutional rights after arresting him	6.38
C. Believes that all violations of the law cannot be satisfied by arrest	6.06
D. When alone, enters building with broken door or window instead of guarding exits and calling for assistance	2.54
E. Becomes emotionally involved when attempting to disperse a crowd	1.79

TRAFFIC CONTROL AND ACCIDENT ACTIVITIES

	Scale Value
A. Explains to a driver why it is dangerous to speed before ticketing the driver for speeding	7.04
B. Takes shortcuts on traffic violations, approaching a car without thinking about whether the occupant is armed	2.44
C. Supports his partner with traffic violations	6.27
D. Is courteous but firm with all traffic violators	6.92
E. Allows onlookers to confuse or destroy evidence at an accident scene	1.65

*Reprinted from: Michael Rosenfeld and Richard F. Thornton, *The Development and Validation of a Police Selection Examination for the City of Philadelphia*. Princeton, N.J.: Educational Testing Service, 1974.

SURVEILLANCE AND CHECKING ACTIVITIES

	Scale Value
A. Is good at showing shopkeepers how to improve security procedures	7.33
B. Unless directed, does not periodically check parks and playgrounds in his sector	2.73
C. Checks vacant and model homes when not busy	6.10
D. Does not show concern for minor problems of residents of his sector	2.94
E. Knows many citizens in his sector	6.65

CLERICAL AND REPORTING (RECORDING ACTIVITIES)

	Scale Value
A. Occasionally incorrectly transmits information in a radio memorandum such as the wrong height of the suspect (e.g., 5' 4" for 6' 4")	3.15
B. Makes occasional errors when completing reports that are required infrequently such as complaint and search affidavits	4.36
C. Keeps an accurate patrol log including every required notation but may neglect to make an entry every 20 minutes when no action is required	5.23
D. Completes an incident report containing a narrative of the occurrence that is legible and concise, yet contains all pertinent information	7.52
E. Crosses out numbers or letters in license numbers when issuing a TVR	2.71

ROUTINE POTENTIALLY DANGEROUS EMERGENCY ACTIVITIES

	Scale Value
A. Withholds fire in a situation calling for the use of weapons where gunfire would endanger innocent bystanders	8.17
B. Stays cool when attempting to settle a domestic dispute	7.40
C. Would not drive in hot pursuit on a foggy night	6.40
D. Takes the word of a single complaintant with no verification from other neighbors regarding a neighborhood disturbance	3.00
E. Stands outside a bar while another officer handles reported trouble inside	2.94

PREVENTATIVE ACTIVITIES

	Scale Value
A. Always secures patrol car before making business checks	6.98
B. Fails to check night deposit boxes unless supervisor is on scene	3.17
C. Never enters business establishments to assure himself that everything is routine	2.52
D. Is likely to notice the absence of required equipment in a patrol vehicle only when it is needed in an emergency	2.83
E. Stops searching after one burglary suspect is found, rusulting in a delay of or possibly not finding a second suspect	2.65

WORK PREPARATION ACTIVITIES

	Scale Value
A. Doesn't know his own district boundaries	1.85
B. Knows streets and locations of street addresses in his district	6.19
C. Always has an up-to-date list of wanted persons	7.21
D. Sometimes reports for work without required personal equipment	2.58
E. Keeps a personal notebook on events and known criminals in his sector	7.73

COURT PREPARATION ACTIVITIES

	Scale Value
A. Can testify as to the facts of a case with little need to refer to notes during the testimony	7.38
B. Becomes confused when testifying as to the facts of a case or circumstances of an arrest	2.65
C. Testifies clearly and concisely indicating good preparation and knowledge of court procedure	7.98
D. Reports for court appearances early to review facts of case and prepare for his testimony	7.67
E. Does not know rules of evidence	2.31

APPENDIX H.
WORK EXPERIENCE CHECKLIST IN SECRETARIAL SCIENCE

Instructions to the Student:

The purpose of this questionnaire is to help you to describe in a systematic manner your work experience in the secretarial field. The information that you provide on the skills and knowledges that you acquired in previous work situations will be useful in integrating your occupational learning experiences with your specific educational goals. By indicating whether you have had experience in performing various specific job tasks, you and your faculty advisor will be in a better position to decide whether you should be considered for academic credit and to determine the kind of additional instruction that you will need in order to satisfy the requirements of your major field.

Complete this checklist if you have job experience in one or more of the positions listed below or in other positions related to the secretarial field. Check all the positions in which you have some experience:

_____ Secretary
_____ Stenographer
_____ Clerk
_____ Typist
_____ Receptionist
_____ Office Machines Operator
_____ Administrative Assistant
_____ Office Supervisor
_____ Other (Please specify)_____

I. Background Information

1. Your Name_____
   Last First Middle Initial
2. Address _____
   Street
   _____ _____ _____
   City State Zip
3. Social Security Number _____
4. Sex _____ Male _____ Female
5. Age _____

II. Educational History

1. What is the highest grade (or level) of formal education which you have completed?
   _____ 8th grade or less
   _____ 9th, 10th, or 11th grade
   _____ High school graduate (or GED diploma)
   _____ Private business school
   _____ Associate's degree
   _____ Bachelor's degree
2. Are you presently enrolled in college?
   _____ Yes
   _____ No (Skip to question 6)

3. Class in college
   _____ Freshman
   _____ Sophomore
   _____ Junior
   _____ Senior
   _____ Other (Please specify)_____

4. What is your major field? _____

5. Have you participated in a college-sponsored work-study program or internship in secretarial studies?
   _____ Yes
   _____ No

6. What kinds of courses in secretarial studies have you taken?
   _____ College courses taken for credit
   _____ Courses at a private business school
   _____ Correspondence courses
   _____ Other (Please specify)_____

III. Employment History in the Secretarial Field

1. List below the positions you held in the secretarial field. Indicate your last job first.

Job Title	Name and Address of Firm	Period of Employment Years Months	Name and Title of Your Supervisor

2. Which of the following equipment have you operated on previous jobs?

_____ Adding Machine
_____ Addressograph Machine
_____ Call Director
_____ Cash Register or Box
_____ Collator
_____ Desk Calculator
_____ Dictating Machine
_____ Drafting Equipment
_____ Electric Date or Time Stamp
_____ Electric Stapler
_____ Electric Typewriter
_____ Filing Equipment
_____ Flexowriter
_____ Intercom System
_____ Magnetic Tape Selectric Typewriter
_____ Magnetic Tape Selectric Composer
_____ Manual Typewriter
_____ Mechanized Index System
_____ Metal/Glass Shredder
_____ Microfilm and Related Equipment
_____ Numbering Machine

_____ Office Copy Machine
_____ Open Storage Rack
_____ Paper Cutter
_____ Paper Shredder
_____ Postage Meter
_____ Pneumatic Tube
_____ Projectors: Film, Slide, Overhead
_____ Pulping Machine
_____ Scales
_____ Security Cabinet or Vault
_____ Signature Machine
_____ Sorting Table
_____ Stencil or Ditto Kit
_____ Stenotype Machine
_____ Switchboard
_____ Tape Dispenser Machine
_____ Telecopier
_____ Teletypewriter
_____ Upright Visible File
_____ Validator
_____ Varitype Machine

3. Indicate your present level of typing skill (check one).

_____ Type 45 net words per minute or faster
_____ Type 30 net words per minute
_____ Type 20 net words per minute
_____ Type fewer than 20 net words per minute
_____ Cannot type

4. Indicate your present shorthand skill (check one).
   _____ Write 100 words per minute or faster
   _____ Write 80 words per minute
   _____ Write 60 words per minute
   _____ Cannot write shorthand or other forms of speed writing

5. Which of the following reports, records, or materials have you typed on your previous jobs?
   _____ Rough drafts
   _____ Final copy (error free)
   _____ Documents (legal contracts, certificates, licenses, etc.)
   _____ Newspaper articles
   _____ Official communication or memoranda, routing slips
   _____ Camera-ready copy
   _____ File guides and labels
   _____ Tables, charts, graphs, etc.
   _____ Dictaphone recorded materials
   _____ General administrative materials
   _____ Library catalog cards
   _____ Forms (purchase orders, transmittals, receipts, etc.)
   _____ Publication manuscripts such as regulations and/or supplements
   _____ Shorthand recorded materials

IV. Job Inventory Checklist

Listed on the following pages are specific tasks which are typically conducted by secretaries. The task descriptions are divided into six major categories: 1. Typewriting, 2. Office Procedures, 3. Record Keeping, 4. Office Machines, 5. Communications, and 6. Supervision. Read each category and indicate with a check (✓) which tasks you performed in your previous work. Then enter the relative time you spent on each task by using the code numbers given below. Relative time spent means the total time you spent doing the task compared with the time you spent on each of the other tasks on your previous jobs. If you had more than one previous job in which a different amount of time was spent on a task, use a code number that will represent the average time spent on that particular task. (Do not be concerned that you have not accomplished many of the tasks listed as no student is expected to have performed all, or even most, of the tasks.)

CHECK (✓) ALL OF THE TASKS YOU HAVE PERFORMED IN THE *ENTIRE COLUMN* OF STEP 1 BEFORE YOU BEGIN TO ENTER THE TIME CODE FOR EACH IN STEP 2. ENTER TIME CODE ONLY FOR TASKS YOU HAVE PERFORMED.

TIME CODE

1. **VERY MUCH BELOW AVERAGE TIME ON THIS TASK.**
2. **BELOW AVERAGE TIME.**
3. **AVERAGE TIME.**
4. **ABOVE AVERAGE TIME.**
5. **VERY MUCH ABOVE AVERAGE TIME ON THIS TASK.**

(Time does not necessarily equal importance)

	STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE
Example:		
1. Typewriting forms (general)	✓	5
2. Preparing forms and reports (general)		
3. Making typewriter corrections using a number of approved methods, such as sno-paque	✓	4
4. Preparing and typing carbon copies		
5. Preparing paste-ups for duplication	✓	2
1. TYPEWRITING		
1. Typewriting forms (general)		
2. Typing forms and reports (general)		
3. Making typewriter corrections using a number of approved methods, such as sno-paque		
4. Preparing and typing carbon copies		
5. Typing copy for paste-ups for duplication		
6. Preparing stencil and ditto masters		
7. Writing brief form		
8. Transcribing shorthand notes		
9. Typing dictated words		
10. Typing messages and memoranda		
11. Typing material or supply orders		
12. Typing addresses on envelopes or parcel labels for mailing		
13. Proofreading typewritten materials		
14. Using proofreading notations		
15. Typing correspondence		
16. Composing letters		
17. Typing payroll reports		
18. Taking proper precautions in typewriter maintenance		

1. TYPEWRITING (cont'd)

STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE

19. Using dictionary and other reference materials
20. Typing camera-ready copy
21. Typing file labels

2. OFFICE PROCEDURES

1. Routing items, such as memoranda, articles, messages, papers, review materials, or mail, etc.
2. Checking routed item check-off lists for completion
3. Sorting and filing records into appropriate categories
4. Filing by a standardized system, such as alphabetical, numerical, or geographical system
5. Documenting bulk transferral of records
6. Limiting access to confidential or classified files
7. Retrieving materials from files
8. Compiling records or reports
9. Preparing office forms or reports
10. Answering telephone
11. Screening calls and visitors when asked to do so by employer
12. Placing or receiving local and interoffice calls
13. Placing or receiving long distance calls
14. Ascertaining names and needs of customers
15. Preparing outgoing mail
16. Opening incoming mail
17. Maintaining inventory of stock or office supplies
18. Running errands for employer
19. Proofreading materials and using standard proofreading notations
20. Using proper word divisions when typing a word interrupted by the end of the line
21. Sending/receiving Telex messages, telecopier transmittals, cablegrams, and telegrams
22. Arranging office furniture and equipment
23. Preparing registered and certified mailings
24. Preparing insured mailings
25. Locating zip codes for various addresses in small, large, and very large towns and cities.

2. OFFICE PROCEDURES (cont'd)

STEP 1	STEP 2
CHECK PREVIOUS JOB TASKS	ENTER TIME CODE

26. Organizing and maintaining an alphabetical filing system, a subject filing system, and a numerical filing system
27. Indexing and coding materials for filing
28. Sorting and classifying materials for filing
29. Filing by cross-referencing
30. Transferring files
31. Preparing reports on petty cash transactions
32. Setting up customer accounts
33. Preparing special delivery mailings
34. Keeping a log or appropriate records of customers
35. Ordering and receiving office supplies
36. Preparing time cards and expense reports
37. Keeping sales records and making reports
38. Keeping production records and making reports
39. Placing file guides in proper position

3. RECORD KEEPING

1. Receiving money
2. Preparing forms and reports (general)
3. Posting data
4. Checking and verifying numbers before posting
5. Making computations on accounts
6. Keeping bank accounts for employer
7. Reconciling checking accounts
8. Recording ordered materials and supplies (office)
9. Keeping an inventory of stock on hand
10. Keeping customer records (general)
11. Keeping records of supplies ordered and received
12. Keeping records of supplies outstanding (not received)
13. Keeping a record and affirming appointments for employer
14. Keeping a record of employee information such as wages, time reports, piecework, overtime, vacation, sick leave, etc.
15. Keeping sales records for employer

3. RECORD KEEPING (cont'd)

STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE

16. Keeping payroll records of employees
17. Keeping production records for employer
18. Recording checkbook information on check register
19. Transferring information from check register or stub to journal
20. Calculating the postage for various classes of mail
21. Keeping a log of appointments for employer
22. Counting and wrapping change
23. Counting and packaging paper currency
24. Preparing reports on petty cash transactions
25. Handling collections and preparing statements of accounts
26. Posting journal entries to ledger accounts
27. Recording business expenses in a cash payment journal
28. Filing using a standardized system with a means for cross-referencing, indexing, and coding

4. OFFICE MACHINES

1. Making computations on accounts
2. Calculating stock inventory
3. Addressing envelopes and parcel labels using addressograph or similar machine
4. Calculating time reports
5. Calculating payroll for employees
6. Preparing and running fluid masters
7. Preparing and running stencils
8. Preparing and running direct-image copy
9. Preparing and running offset masters
10. Collating materials
11. Stapling, taping, or binding of papers, books or booklets
12. Weighing and calculating postage rates
13. Making minor repairs or adjustments of office machines
14. Using letter guides or templates for hand-layout work

4. OFFICE MACHINES (cont'd)

STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE

15. Tracing illustration, charts, or graphs using tracing table or screen
16. Transcribing letters or other documents, etc.
17. Proofreading materials
18. Using type correction techniques typically employed, such as sno-paque
19. Transcribing recorded materials
20. Packaging printed or duplicated materials for shipment and/or distribution
21. Preparing production reports on printed or duplicated materials
22. Processing of incoming and outgoing duplicated materials
23. Typewriting forms and papers
24. Operating transcription equipment
25. Recording communication for other documents

5. COMMUNICATIONS

1. Designing forms
2. Answering telephone
3. Placing or receiving local or inter-office calls
4. Placing or receiving long distance calls
5. Interpreting hotel and motel listings
6. Making travel arrangements for employer
7. Designing an itinerary for employer
8. Interpreting railroad and airline timetables
9. Screening calls when directed to do so
10. Making and arranging appointments for employer
11. Relaying and sending messages
12. Writing phone messages in shorthand
13. Preparing outgoing mail
14. Opening and routing incoming mail
15. Interviewing customers and ascertaining their needs
16. Acting as a host/hostess at company-sponsored seminars or open houses
17. Addressing envelopes or parcels
18. Answering correspondence
19. Composing letters for employer

5. COMMUNICATIONS (cont'd)

STEP 1 CHECK PREVIOUS JOB TASKS	STEP 2 ENTER TIME CODE

20. Collecting and assembling time and piecework reports from employees for payroll and record purposes
21. Communicating with clients in a foreign language

6. SUPERVISION

1. Planning or scheduling on-the-job training
2. Supervising on-the-job training
3. Conducting on-the-job training
4. Preparing forms and reports
5. Locating information
6. Providing supervisory indoctrination of newly-assigned personnel
7. Evaluating the maintenance and use of work space, equipment, or supplies
8. Evaluating work schedules
9. Drafting revised job descriptions
10. Assigning secretaries to work stations
11. Implementing security programs or procedures
12. Establishing performance standards
13. Supervising the counseling of subordinates
14. Supervising the developing or improvement of work methods or procedures
15. Supervising the maintenance or utilization of equipment
16. Drafting correspondence
17. Evaluating administrative forms, files, or procedures
18. Responding to phone calls
19. Evaluating compliance with work standards
20. Interpreting policy, directives, or procedures for subordinates
21. Reviewing record keeping procedures
22. Maintaining confidential personnel records
23. Keeping a record of employee information

V. General Comments

List any other relevant tasks that you performed on your previous jobs in the secretarial field that were not listed in the previous section. You may also make other general comments that you feel may be relevant to your work experience.

APPENDIX I.
INSTRUCTIONAL OBJECTIVES AND SAMPLE PERFORMANCE TEST* IN SECRETARIAL SCIENCE

BUSINESS LETTERS

Major Function: Communications

Other Functions: Typewriting
Office Procedures
Supervision

Job Tasks: Preparing forms and reports for employer
Answering correspondence
Composing letters
Proofreading materials
Using proper word-division
Counseling subordinates
Using a dictionary and other reference materials

Sample Measurement Tasks:

OBJECTIVE: Given a description of a hypothetical situation and name of a business letter appropriate to that situation, the student will compose the business letter correctly according to the following criteria:

1. All the conventions of the specific type of business letter will be followed.
2. The letter will be grammatically correct.
3. The letter will be well organized and in the correct form.
4. The letter will be correctly punctuated.

The following types of letters will be considered business letters:

credit letters	letters of invitation
sales letters	letters of request
order letters	letters of application and personal data sheets
collection letters	letters answering requests
complaint letters	social business letters
claims and adjustment letters	transmitting letters
letters of appreciation	letters of acknowledgment
letters of recommendation	

SAMPLE ITEM: You are a secretary for the Thorpe Paper Company and you have received a claims letter from Mr. Allen C. Jones, President of the Pearl Stationery Store. The shipment of 200 boxes of stationery he ordered in the paisley pattern arrived instead in the floral pattern. Write him a letter of adjustment. Use the following information:

Pearl Stationery Store	Thorpe Paper Company
1630 Ocean Front	1801 Speedway
Beverly Hills, California	Los Angeles, California

*Adapted with permission from Instructional Objectives Exchange, *Secretarial skills*. Los Angeles: Instructional Objectives Exchange, 1970.

CRITERIA: The letter of adjustment will meet the following criteria:

1. The letter will include a statement of what will be done about the claim.
2. Negative words will not be used, and accusations will not be made.
3. Acceptable letter of adjustment form will be followed:
   a. date line
   b. inside address
   c. salutation
   d. body
   e. complimentary closing
   f. signature block
4. Acceptable conventions of punctuation, grammar, and spelling will be followed.

SAMPLE ANSWER:

Thorpe Paper Company
1801 Speedway
Los Angeles, California

January 10, 1970

Mr. Allen C. Jones, President
Pearl Stationery Store
1630 Ocean Front
Beverly Hills, California

Dear Mr. Jones:

On Friday, January 16, we will send to you, via parcel post special handling, 200 boxes of stationery (paisley pattern) to replace those that were sent by error. The floral order will be picked up from you at this time. There will, of course, be no handling charge.

Due to illness this Christmas season we were forced to use inexperienced help for two or three days in the shipping department, and this factor was probably responsible for the mix-up in your order.

We have instigated a new training program for our "on call" personnel. We expect that this precautionary measure will help us to give you better service in the future, even during rush business seasons.

Thank you for writing to us and please accept our sincere apologies for any inconvenience caused you.

Very truly yours,
Mr. Stephen P. Golden
Adjustment Manager

APPENDIX J.
EMPLOYER RATING FORM

This is an example of a typical evaluation form used in sponsored work-study programs by employers to rate the performance of students working under their direction. It has several shortcomings and is therefore not recommended for assessing work experience. (See page 29 for a discussion of the shortcomings of this form.)

EVALUATION REPORT
EMPLOYER'S RATING SHEET FOR STUDENT-EMPLOYEES

EMPLOYER _____ Date _____
DEPARTMENT OR DIVISION _____
RATED BY _____ TITLE _____
STUDENT-EMPLOYEE _____

INSTRUCTIONS: PLEASE EVALUATE THE STUDENT-EMPLOYEE BY PLACING CHECK MARKS IN THE APPROPRIATE BOXES, AND BY USING THE REMARKS SECTION FOR YOUR COMMENTS. NOTE THAT "DOES WELL" MEANS THAT THE STUDENT-EMPLOYEE MEETS THE STANDARD OF WHAT IS EXPECTED OF AN EMPLOYEE IN THE JOB CLASSIFICATION.

PLEASE RETURN THIS IN THE ENVELOPE PROVIDED DIRECTLY TO THE INTERNSHIP COORDINATOR. THANK YOU.

(Place X in appropriate box)

	NEEDS ATTENTION	DOES WELL	OUT-STANDING
USES EQUIPMENT/TOOLS SKILLFULLY			
JOB KNOWLEDGE			
FOLLOWS INSTRUCTIONS			
ACCURACY, EFFECTIVENESS, COMPLETENESS			
GETS WORK DONE ON TIME			
QUANTITY OF WORK			
INTEREST IN JOB			
RELATIONS WITH SUPERVISORS			
RELATIONS WITH PUBLIC			
COOPERATES WITH FELLOW EMPLOYEES			
INITIATIVE & SELF-RELIANCE			
SUITABLE APPEARANCE			
ATTENDANCE & PUNCTUALITY			

REMARKS:
PLEASE ADD YOUR COMMENTS TO THE ABOVE RATINGS. ESPECIALLY DESIRED ARE YOUR SUGGESTIONS FOR THE IMPROVEMENT AND DEVELOPMENT OF THE STUDENT-EMPLOYEE.

IF YOU HAD AN OPENING IN YOUR DEPARTMENT FOR A FULL-TIME EMPLOYEE, WOULD YOU CONSIDER THIS STUDENT-EMPLOYEE A DESIRABLE APPLICANT?
(This is not a commitment to employ.)